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No. 4

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Articles to be Published in Early Numbers of the **AMERICAN JOURNAL OF OBSTETRICS and GYNECOLOGY**

- Report of a New Method of Shortening the Round Ligaments of the Uterus with End Results in 100 Cases.**—Hermann Grad, New York, N. Y.
- Version.**—Irving W. Potter, Buffalo, N. Y.
- The Common Pathological Lesions Which are Classed as Puerperal Infection.**—John O. Polak, Brooklyn, N. Y.
- Pathologic Leucorrhea and Its Treatment.**—Francis Reder, St. Louis, Mo.
- Submucous Adenomyomata.**—O. H. Schwarz, St. Louis, Mo.
- Some Factors that Determine Tissue Resistance to Cancer.**—James E. Davis, Detroit, Mich.
- Borderline Carcinoma of Cervix and Its Treatment.**—Edward A. Weiss, Pittsburgh, Pa.
- The Toxic Thyroid; Its Treatment by Ether-Oil-Colonic Anesthesia.**—G. K. Dickinson, Jersey City, N. J.
- Report of a Few Cases of Postoperative Convalescence, Complicated by Faulty Functioning of the Ductless Glands.**—Charles L. Bonifield, Cincinnati, O.
- Gangrenous Bullosa in the Newborn Infant.**—Magnus A. Tate, Cincinnati, O.
- Early and Late Causes of Abdominal Diseases.**—Hugo O. Pantzer, Indianapolis, Ind.
- Cesarean Section.**—Charles A. Stillwagon, Pittsburg, Pa.
- A Preliminary Report of Pyelitis in Pregnancy.**—Greer Baughman, Richmond, Va.
- Large Mesocolic Hernia in a Female Simulating Cholecystitis.**—Ingersoll Olmstead, Hamilton, Ont.
- Pseudocholecystitis.**—Harold D. Meeker, New York, N. Y.
- Obstruction of the Superior Mesenteric Vessels from Bands, with Threatened Gangrene of the Greater Part of the Small Intestine. Recovery.**—James N. West, New York, N. Y.
- Case of Degenerating Fibroid.**—D. C. Moriarta, Saratoga Springs, N. Y.
- The Education of Nurses for Obstetric Service.**—Sylvester J. Goodman, Columbus, O.
- Missed Abortion.**—J. C. Litzenberg, Minneapolis, Minn.
- The Treatment of Abortion Complicated by Sepsis.**—George A. Peck, New Rochelle, N. Y.
- Delivery of Adherent Placenta in Abortion.**—Charles E. Ruth, Des Moines, Iowa.
- The Influence of Dysthyroidism on the Generative Functions.**—Miles F. Porter, Fort Wayne, Ind.
- Preparation of the Skin for Operation, with Special Reference to the Use of Picric Acid.**—H. W. Hewitt, Detroit, Mich.
- The Common Pathological Lesions which are Classed as Puerperal Infection.**—John O. Polak, Brooklyn, N. Y.
- Splenic Leucemia Associated with Pregnancy.**—Geo. W. Kosmak, New York, N. Y.
- Childlessness.**—Charles A. L. Reed, Cincinnati, Ohio.
- Some Cases of Thrombophlebitis during the Puerperium Following an Attack of Influenza.**—Lewis F. Smead, Toledo, O.
- Benign Mammary Tumors and Intestinal Toxemia.**—W. Seaman Bainbridge, New York, N. Y.
- A New and Modern Treatment of Cancer of the Breast.**—James F. Percy, San Diego, Cal.
- Some Indications for Hysterectomy.**—James F. Baldwin, Columbus, Ohio.
- Intramural Uterine Fibroid Enucleated Through the Anterior Vaginal Culdesac.**—Rufus B. Hall, Cincinnati, Ohio.
- Fibroid of the Ovary.**—Edmund D. Clark, Indianapolis, Ind.
- Cystopapilloma of the Ovary.**—John F. Erdmann, New York, N. Y.
- Dermoid Cysts of the Ovary; Etiology, Diagnosis, and Treatment.**—Benjamin B. McClellan, Xenia, Ohio.
- Certain Procedures in Vaginal Surgery.**—Samuel W. Bandler, New York, N. Y.
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NO. 4

Original Communications

CERTAIN NEW CONCEPTIONS OF THE RELATION OF THE LIVER TO THE PROBLEMS OF ABDOMINAL SURGERY*

A SUMMARY OF RECENT INVESTIGATIONS AND OF METHODS BASED UPON THEM WHEREBY THE MORTALITY OF ABDOMINAL OPERATIONS MAY BE DIMINISHED

BY GEORGE W. CRILE, M.D., F.A.C.S., CLEVELAND, OHIO

WHAT may be termed the "problems of abdominal surgery" are no longer concerned with such simple operations as the removal of an interval appendix, or of an acute appendix in advance of peritonitis, the removal of benign tumors, of stones in the bladder, or of uncomplicated gallstones. Operative technic in these operations is practically standardized and the patients come to operation with their normal factors of safety little if at all impaired.

Our problems lie rather among the so-called "bad risk" cases, patients in whom the margin of safety has been reduced by starvation, by infection, by the toxins of cancer, by autointoxication from obstruction of the bowels, from acute and chronic suppurating gall bladder or from acute and chronic peritonitis. To these may be added such extraabdominal conditions as interstitial nephritis with high blood-pressure, old age, cardiovascular disease, pulmonary tuberculosis, etc.

It is for such cases as these that we are seeking added means of control whereby to supplement our surgical resources. New consideration of these problems need not be concerned with problems of technic,

*Presidential address delivered at the Thirty-Third Annual Meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, held at Atlantic City, N. J., September 20-22, 1920.

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with methods of suture or of approach, with anatomic considerations, with increased skill of manipulation, with the control of hemorrhage, with suture materials; these methods of attack have been mastered by the great abdominal surgeons of the past and the present generations.

Clinical and physiologic studies have yielded certain valuable data, such as the futility of stimulants and the advantages of blood transfusion, but they failed to discover the fundamental nature of the phenomena presented by these cases. We, therefore, endeavored to solve the problem by histologic studies in which we were continually confronted by the constant co-existence of the clinical phenomena of lowered vitality from any cause with certain histologic changes in the brain, liver,

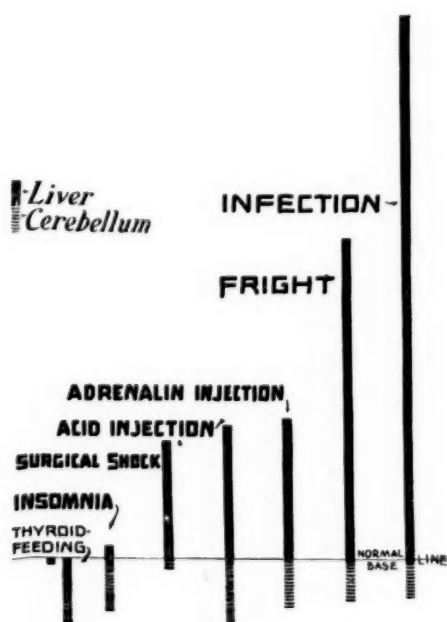


Fig. 1.—Percentile variations in the electric conductivity of the liver and cerebellum in exhaustion from various causes. (Note that the conductivity of the liver is increased, whereas the conductivity of the brain is decreased.)

and adrenals. The microscope could not reveal the nature of these changes; but since the histologic picture represented variations in the molecular concentration of the cell contents and changes in the nuclear and cell membranes, it occurred to us, especially in view of the studies of Osterhaut, Galeotti, Lillie, Loeb, and other physicists, that these cell changes might be more accurately studied and some light thrown upon the interrelation of the organs in which they occurred, by measurements of their electric conductivity.

To this end, the electric conductivities of 4,798 sections of tissues from 436 rabbits and 137 clinical specimens have been measured. After establishing the apparent range of conductivity of these tissues, especially the brain and the liver, in normal animals, under changing conditions,

including varying lengths of confinement, different seasons, etc., groups of rabbits were subjected to exhaustion from various causes: prolonged insomnia, extreme fright, physical trauma, surgical shock, infection, hydrochloric acid injection, thyroid feeding, iodoform poisoning, strychnine poisoning, prolonged ether anesthesia, and prolonged nitrous oxid anesthesia. We have observed also the effect upon the electric conductivity of the brain and the liver of the inceptive stage of surgical shock, of toxic shock, of strychnine and of adrenalin shock. We have observed the effects of sleep and of rest after prolonged insomnia and of morphine in the presence of infection. We have measured the conductivity of the brain and of the liver in rabbit fetuses, in newborn, and in young rabbits. These results are to be reported in detail elsewhere. The outstanding fact is that exhaustion from any cause, surgical shock, insomnia, emotion, fright, infection, etc., is marked by a *diminished conductivity of the*

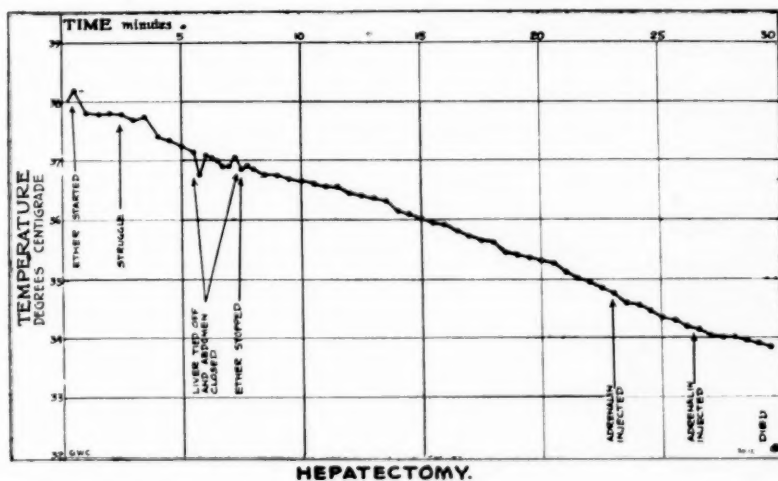


Fig. 2.—Temperature changes in the brain after excision of the liver.

brain and an increased conductivity of the liver (Fig. 1). With the exception of the liver, the tendency of all the tissues in exhaustion is toward a diminished conductivity. Restoration, when it is accomplished by long periods of rest after insomnia, is marked by an increasing conductivity of the cerebrum and cerebellum toward the normal and decreasing conductivity of the liver toward the normal.

In brief, the findings in our researches which bear directly upon the relation of the liver to the functional activity of the brain may be summarized as follows:

(a) After excision of the liver, the power of the brain to drive the organism to transform potential energy into kinetic energy, such as heat or muscular or mental action, is rapidly diminished and completely lost at the time of inevitable death, usually within a few hours.

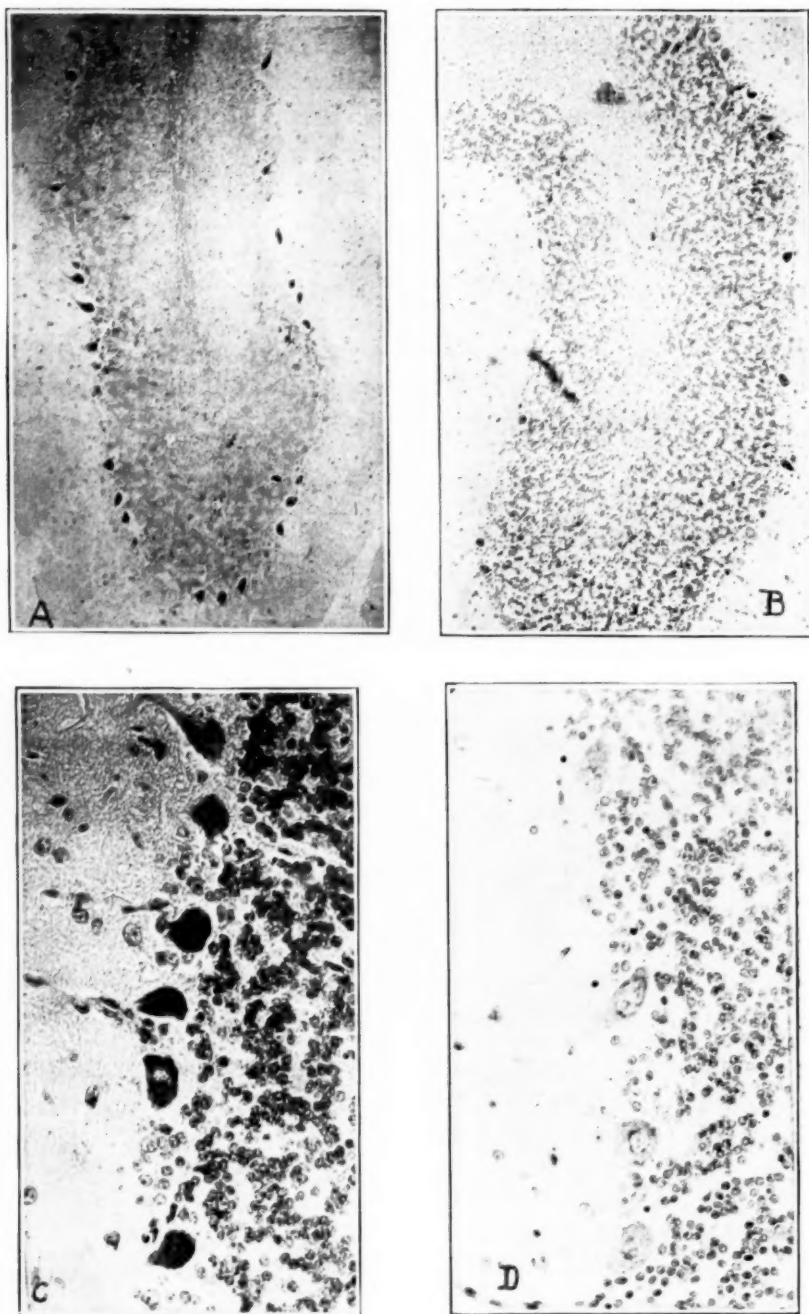


Fig. 3.—Cytologic changes in the brain cells after excision of the liver. *A* and *C*, section of normal cerebellum of a dog. *B* and *D*, section of cerebellum of a dog whose liver had been excised. (*A* and *B* from photomicrographs x85. *C* and *D* from photomicrographs x310.)

(b) After excision of the liver, the temperature of the brain falls progressively until death (Fig. 2).

(c) The brain-cells show changes in the cytologic structure which are progressive from the moment the liver is excised (Fig. 3).

(d) In every type of exhaustion from whatever cause, the cells of the liver show cytologic changes, such as diminished power of differential staining, edema, and increased electric conductivity (Fig. 4).

(e) Granting adequate circulation and respiration in a decapitated animal, the excision of the liver causes death earlier than decapitation or adrenalectomy.

From these findings we may suppose that the integrity of the liver is essential to the work of the brain, just as the integrity of the liver is essential to the elimination of the acid by-products of metabolism by the kidneys and the lungs. When the liver is excised, the blood tends to become acid as the animal approaches exhaustion. Neither the transfusion of blood nor the administration of adrenalin or of morphine exerts the least check on the exhaustion and death which follow excision of the liver.

For its oxidizing and reducing power, the liver apparently depends, in part at least, on the adrenals; for the excessive intravenous injection of adrenalin on the one hand, and adrenalectomy on the other, cause marked cytologic changes in the liver cells—chromatolysis, edema, eccentric position of the nucleus.

As noted above, in our electric conductivity studies we found that in exhaustion from any cause the liver and the brain were affected in opposite directions, i.e., in extreme exhaustion the conductivity of the brain was decreased and the conductivity of the liver was increased. In the earliest stages of stimulation these changes were reversed, the period of increased conductivity of the brain apparently corresponding to the period of hyperchromatism established by our histologic studies.

From these premises we conclude that the liver is inseparably associated with the brain in the production of shock and exhaustion; but as the liver has no means of immediate contact with the external excitants of shock and exhaustion, it apparently in some way is influenced indirectly through the mediation of the brain.

If our premises regarding the interrelation of the brain and the liver are sound; i.e., if the liver is the key to the chemical stabilization of the brain cells, it follows that when the margin of safety has been reduced by diseases of the liver, such as sclerosis, an abscess, a tumor, infection, or jaundice, by starvation or emaciation, by want of water equilibrium, by loss of sleep, or worry, or fatigue from exertion, etc., then the liver must be protected against an increased burden of work such as worry, dread, muscular exertion, the trauma of operation, or pain during or after operation. These factors are excitants of metabolism; excitants

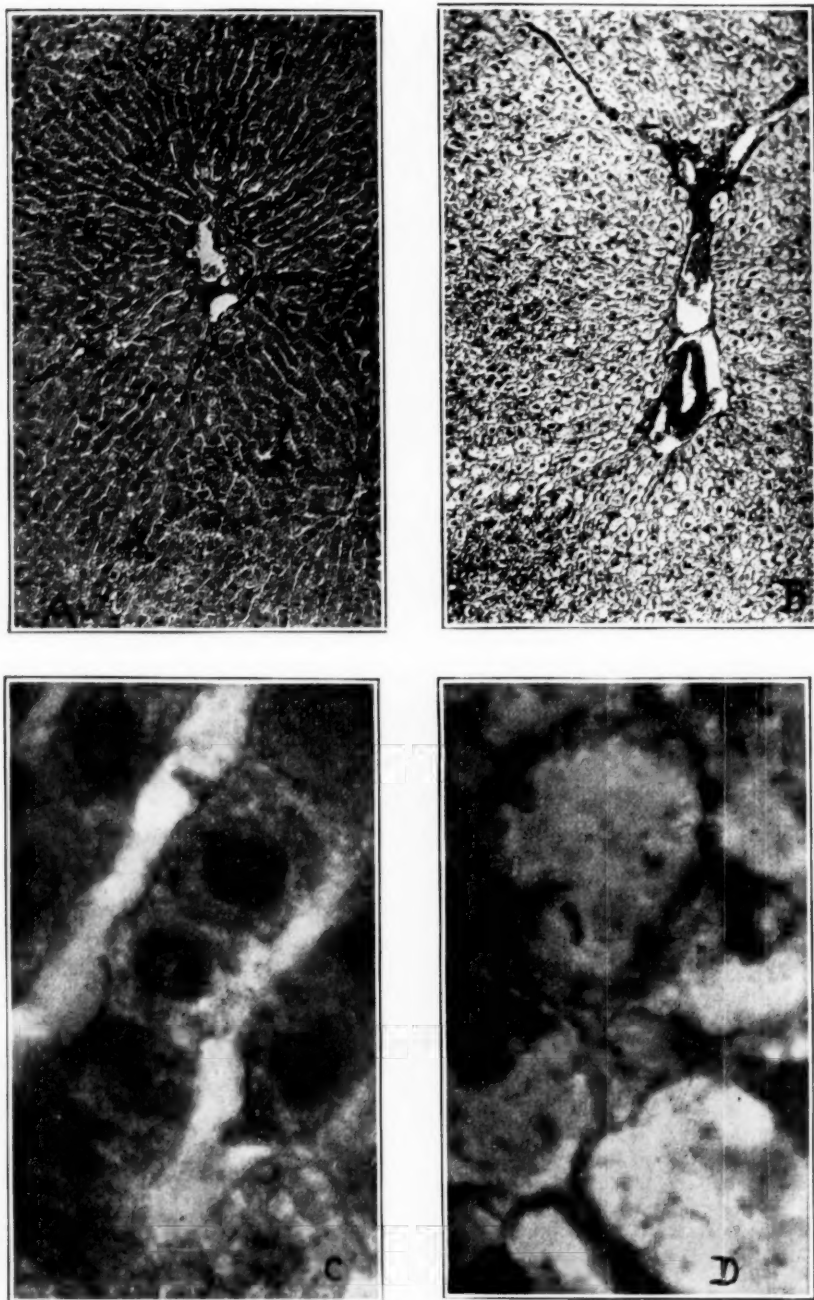


Fig 4.—Cytologic changes in the liver cells in exhaustion. *A* and *C*, section of normal liver of a rabbit. *B* and *D*, section of the liver of a rabbit exhausted by continuous insomnia for one hundred hours. In *B* and *D* note vacuolated spaces and general disappearance of the cytoplasm, and in *D* the eccentric misshapen nuclei. (*A* and *B* from photomicrographs $\times 100$, *C* and *D* from photomicrographs $\times 1640$.)

of metabolism increase the work of the liver; increased work of the liver must be avoided.

Our studies, moreover, indicate that the excitants of metabolism are not the only cause of increased strain upon the liver and the nervous system. Activity of the liver cells is interfered with also by whatever interferes with the internal respiration; e.g., a failing circulation of the blood from impaired heart action, myocardial weakness, or valvular lesions. Any heart deficiency which lessens the circulation of the blood in the liver and therefore diminishes the internal respiration of the liver cells, is best met by the early administration of digitalis in approximately the following dosage: 20 minims every four hours for twelve doses. If the patient has not improved sufficiently after two days, this dosage is repeated.

Another common interference with the internal respiration of the liver is impairment of the pulmonary exchange, as in asthma, in emphysema, in pleurisy with effusion, in pulmonary tuberculosis; in the presence of a lung abscess or an empyema tumor in the mediastinum, in internal and external obstructions of the trachea, in short, fat, stodgy, stertorous alcoholics, whose breathing is normally a wheeze, and who are normally in a state of suboxidation. A patient in whom any one of these conditions is present must be treated with the utmost care in order to protect the internal respiration of the liver; as must, also, patients whose internal respiration is diminished by primary or secondary anemia. Such patients endure with difficulty increased metabolism from any cause, or any further interference with their internal respiration.

In the course of operations the most important single cause of interference with the internal respiration is the inhalation anesthetic. Dr. Menton and I showed that all inhalation anesthetics cause an increased H-ion concentration of the blood; that is to say, an increased acidity. Increased acidity interferes directly with the internal respiration. Moreover, in the case of ether anesthesia, there is also an enormous decrease in the permeability of the cell membranes, so that the internal respiration is entirely cut off. Temperature measurements with the thermocouple showed an astonishing fall in the temperature of the brain under ether anesthesia, as rapid a fall as that which followed the excision of the liver (Fig. 5-A). It is a fact of extraordinary interest that either excision of the liver or complete surgical anesthesia by ether causes death in about an equal length of time; and that if the blood pressure and respiration be maintained, animals live longer after decapitation than under ether anesthesia, or after excision of the liver. In its physiologic results, therefore, full ether anesthesia is the equivalent of the removal of the liver.

On the other hand, nitrous oxid-oxygen anesthesia presents a totally different picture (Fig. 5-B). The temperature of the brain scarcely changes; and the internal respiration is only slightly disturbed. Nevertheless, in heavily handicapped patients, even full nitrous oxid anesthesia

is not wholly safe. The safe method in such cases as we have listed above is nitrous oxid analgesia, combined with complete local anesthesia. In addition, the loss of temperature of the liver by the cooling of the blood which passes to the liver from the exposed intestines should be prevented as far as possible. The evil effects of cooling the liver and the good effects of warming the liver are obvious, but are strikingly illustrated by our temperature measurements, in which it was significant to note that the introduction of hot water into the stomach was followed by an immediate increase in the temperature of both the brain and the liver, *the increase in the brain occurring first* (Fig. 6.).

Up to this point we have dealt with experimental results, with the everyday observations of the clinic, and with certain theoretic deduc-

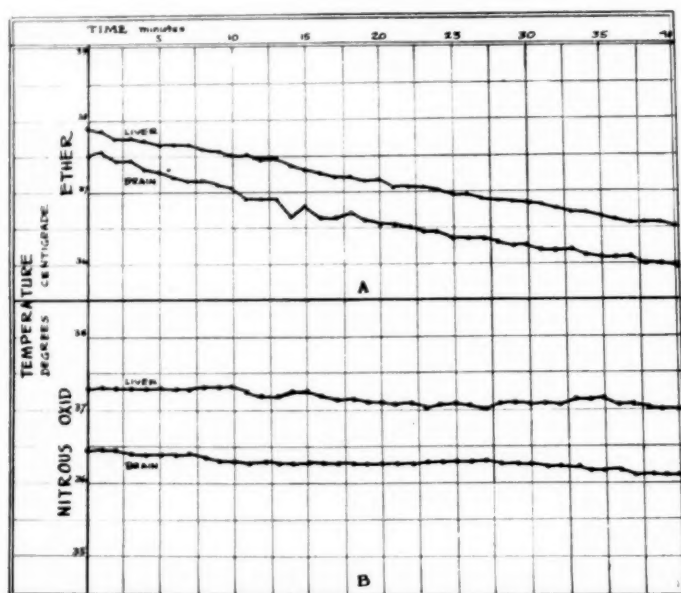


Fig. 5.—Comparative changes in the temperature of the brain and the liver produced (A) by ether anesthesia, (B) by nitrous oxid-oxygen anesthesia.

tions. But the practical value of an experimental research, or the applicability of a theory is to be found only by its test in the crucible of the clinic. In accordance with these principles, therefore, we have adopted the following general scheme for the management of abdominal operations:

1. The control of fear and anxiety, if not by management, then by a moderate dose of morphine.
2. The use of nitrous oxid-oxygen anesthesia.
3. Regional blocking by local anesthesia.
4. A feather-edge technic.
5. Keeping raw tissue covered as much as possible.
6. Prevention of loss of blood.
7. Prevention of loss of body heat.

8. In addition to the inhalation anesthetic, local infiltration is also employed, to promote relaxation of the abdominal muscles. If relaxation is not complete, ether is added, but is discontinued as soon as the requisite degree of relaxation is secured.

9. As we have emphasized, nitrous oxid-oxygen is the anesthetic of choice. In the absence of a specially trained anesthetist, however, ether may be required, in which case Gwathmey's warmed vapor method with local infiltration is the method of choice, so that the least possible amount of ether will be used.

10. If there is free blood, as in military surgery, Major Taylor's plan of leaving the blood in the abdomen until the intestinal technic is completed seems sound. Apparently, the free blood serves as a measurable protection against damage from the exposure to air.



Fig. 6.—Changes in the temperature of the brain and the liver produced by the introduction of hot water into the stomach.

11. A shock patient is turned from side to side as little as possible during operation, as has been emphasized by Major Gregory Marshall.

12. The abdomen is kept open the least possible length of time.

13. Manipulations and exposure of the viscera are reduced to a minimum; therefore, an ample incision is made.

14. If a patient is in deep shock, some blood is transfused at the beginning and more at the close of the operation.

15. In certain cases, if debility is marked, and the operation is such as to interfere with the physiologic balance of the patient, as in resections of the stomach, intestines, or gall bladder, it is advisable to perform the operation in two seances, the second major step being taken after the nutritional balance is well established.

16. In starved cases from cancer, or in grave risks, nitrous oxid is

used only to provide analgesia, and anesthesia is secured mainly by local anesthesia.

17. If, as we believe, the liver is the key to chemical stabilization, and since chemical activity is increased by heat, then heat applied to the entire abdomen both before and after operation in bad risk cases increases the temperature of the liver, thus increasing its metabolism. This increased metabolism of the liver, in turn, defends the organism as a whole. Thus far the clinical experience seems to bear out this assumption.

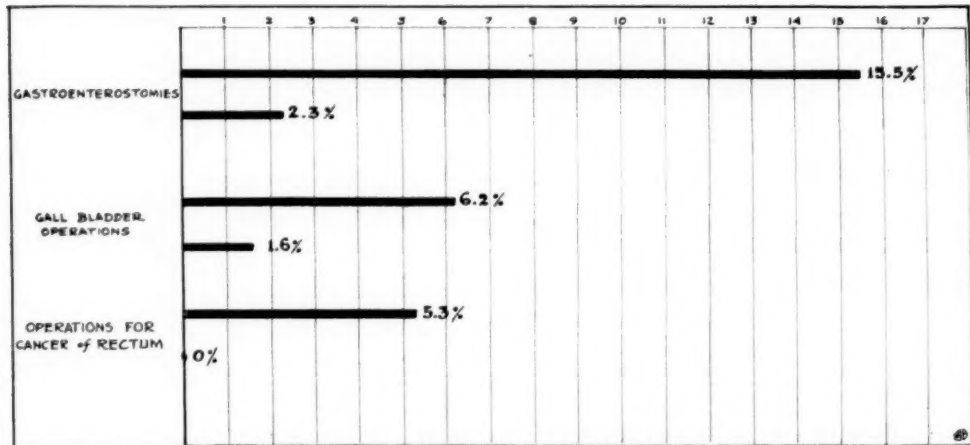


Fig. 7.—Comparison of mortality of bad risk cases before and since the application of the physical interpretation.

COMPARATIVE MORTALITY TABLE

	PRIOR TO APPLICATION OF PHYSICAL INTERPRETATION			SINCE APPLICATION OF PHYSICAL INTERPRETATION		
	NUMBER OF CASES	DEATHS	RATE	NUMBER OF CASES	DEATHS	RATE
Gall bladder and common duct operations	389	34	6.2%	62.1	1	1.6%
Gastroenterostomy and resection of the stomach for cancer and ulcer	110	17	15.5%	43	1	2.3%
Colostomies and Radical operations for cancer of rectum	30	3	10%	44	0	0%

By the observance of this general plan of management, always adapted to the requirements of the individual patient, the mortality rate for bad risk patients has been markedly lessened and the range of operability extended, as is shown in particular by a comparative study of the case histories of my personal series of bad risk cases, including 153 gastroenterostomies and gastric resections, 451 gall bladder operations and 74 operations for cancer of the rectum, in which comparison is made between the series prior to the application of the principles stated above and the series since the practical application of these principles (Fig. 7).

OSBORN BUILDING

SOME INTERESTING SURGICAL CONDITIONS OF THE LIVER AND BILIARY TRACT*

BY JOSEPH H. BRANHAM, M.D., BALTIMORE, MD.

THE gall bladder is ordinarily the seat of surgical conditions in this region because of the inherent susceptibility of this organ, due to anatomic peculiarities. The underlying feature of the surgical condition is usually some form of infection which may be induced, first, through the blood stream, or by direct extension along the common and cystic ducts; second, cholelithiasis, which, however, is nearly always secondary to infection. Traumatism and tumors are comparatively rare. Gallstones are nearly always formed in the bladder, but may also form in the ducts.

What shall be done with a diseased gall bladder? In my papers read before this Society in 1913 and 1917, I predicted that cholecystectomy would become the operation of choice. This prediction has come true. When an operation is necessary, the organ is already diseased. The value of a normal gall bladder is not very great; its influence on the digestive process is slight and uncertain. As a reservoir it has some value and after its removal there is a compensatory dilatation of the common and hepatic ducts. Animals which have no gall bladder have large, distensible ducts to take its place. A healthy gall bladder should never be removed, nor should it be subjected to operation. When symptoms are severe enough to demand operation the organ in most cases is so diseased as to be of little or no value, and is a menace to future health.

The question of reoperation in gall bladder disease is ably discussed by Dr. John W. Deaver in the *Journal of the American Medical Association* of April 17, 1920. He reports reoperation in 10 per cent of cholecystostomies and 1.3 per cent of cholecystectomies. The reports from the Mayo Clinics are similar. A few years ago, cholecystostomy showed less mortality. This is now reversed because the operation is now done in extreme cases of severe infection of the gall bladder with complications. The reoperations are necessitated by recurrence of stones, by adhesions, and by fistulæ. The first are much more common after cholecystostomy, but may occur in the ducts after cholecystectomy. Adhesions of such a character as to require reoperation, because of pain or interference with the mobility of the stomach or intestines, result, in most instances, in severe cases which are associated with suppurative peritonitis and which require long continued drainage. In such cases

*Read at the Thirty-Third Annual Meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons held at Atlantic City, N. J., September 20-22, 1920.

the adhesions are caused by the primary condition and not by the operation. I do not believe that, in a given case of gallstones or cholecystitis, adhesions should be more frequent or severe after removal than after drainage, provided the removal is done carefully.

For several years I have operated by a method that is practically subperitoneal. I have not seen this method described, but do not doubt that others may have used it. It is briefly as follows:

After the abdomen is opened the ducts and neighboring organs are carefully examined; this can usually be done by palpation. If the disease is confined to the gall bladder, an oval incision is made over the lower anterior surface of the organ; the peritoneal coat is dissected from the deeper tissues; when the duct is reached it can always be recognized by the well-marked sphincter. A considerable margin of the peritoneal coat is left at the liver attachment; the duct is severed and, after being explored and emptied of stones, etc., a large catheter is fastened to it with a twenty-day catgut suture. The peritoneal coat from each side is stitched together and then to the ventral peritoneum. This leaves the catheter outside the peritoneal cavity and gives a smooth serous surface to cover the entire wound, thus preventing adhesions. By confining the incision to the accessible part of the organ, the suturing is made easier. A small cigarette drain left in for one or two days is all that is needed in most cases. Operations performed in this way are rarely followed by adhesions and the patients are usually left in good condition.

Fistulae opening from the gall bladder or ducts into the small intestine or colon, and in one case (reported in this paper) into the stomach, are often the cause of secondary operation. When the adhesions are very dense and extensive, gastroenterostomy gives the best permanent relief. Failure to close the drainage tract which in most cases, like the above, is due to obstruction by stones or stricture, may necessitate reoperation.

CASE 1.—Mrs. K.; aged forty-nine; white; came under my care in the early part of the winter of 1908. She had marked ptosis of the liver and a large tumor connected with its lower anterior surface. This was thought to be malignant. Operation, December 18, 1908. On opening the abdomen a tumor half as large as a man's fist was found. It was in the lower abdomen and dragged the liver, to which it was attached, down to such a degree that an elastic tube could be placed above it entirely cutting off the blood supply and making the removal bloodless. The liver wound was snugly closed by mattress sutures. The patient made a quick recovery. Microscopic report showed gumma. Similar cases occurred in the practice of two prominent surgeons in Baltimore about the same time. Routine Wassermann examination will, probably, prevent such mistakes.

CASE 2.—E. C., aged fifty-six; white; entered Franklin Square Hospital during the summer of 1914 with a history of recurrent attacks of pain in the gall bladder region associated with jaundice. Operation: cholecystostomy. At that time the gall bladder was very much damaged and I thought it should have been removed, but this was not done because of the patient's depressed condition. Patient was relieved for a time from the symptoms and remained in fair health. Later, gall

bladder trouble appeared. Several of these attacks were very severe and associated with high fever. Suffering became so acute that the patient re-entered the hospital May 13, 1919. Operation at this time revealed a very much thickened gall bladder, filled with stones and closely adhering to the stomach. The gall bladder was removed and, in separating it from the stomach, a fistulous opening was found between the two organs. The patient was relieved temporarily, but soon had a return of the pain and was operated a third time, December 20, 1919, when several very large stones, packed in sand-like material, were removed from the common duct. Several other stones were discharged during period of drainage. The fistula has healed, and the patient's general condition is improved. Before the second operation the patient suffered from frequent and severe attacks of biliary vomiting. Dr. Deaver refers to the occurrence of such cases in his paper.

CASE 3.—Mrs. K.; aged nineteen; white. Operated, June 21, 1920, for suppurative salpingitis; vaginal puncture and drainage; condition followed confinement and ran a subacute course. Adhesions very dense and relief only temporary. On July 31, the abdomen was opened and the left tube removed. Ten days later this was followed by an enterostomy for obstruction. At this time the patient was *in extremis*, but she soon rallied and gained strength very rapidly.

August 14, 1920, this patient was suffering with classical symptoms of acute gall bladder abscess, jaundice and toxemia very marked. Cholecystostomy. Gall bladder very tense; anterior part filled with turbid fluid; posterior part with thick pus; anterior lining membrane pale, the posterior one, near duct, markedly congested; a small stone was discovered in the duct near the gall bladder. The improvement was immediate and the patient is now at home and in good condition. Drainage of the bladder seemed best in this case because of the low vitality of the patient and because the organ was little changed.

WHERE THE RUBBER GLOVE IS BEHIND THE TIMES*

BY ROBERT T. MORRIS, M.D., F.A.C.S., NEW YORK, N. Y.

WHEN men smile and agree, progress weeps. At the present moment many men, who would like to express themselves freely on the subject of the rubber glove, are afraid to do so because of complications which might arise in connection with hospital politics and because of social reactions relating to a convention or established habit in thought. As civilization becomes more and more complex there is a tendency toward standardizations. Standardization represents a natural reaction to radicalism, a necessary reaction to radicalism which, like the rush of antibodies to a point of irritation, may sometimes result in autolysis and destructive end result. The rubber glove belongs to standardization and is one of its most valuable adjuncts. The standardization idea in every field of human activity represents a great moving force of recognized value. It reaches limitations. A locomotive represents a great moving force. It reaches limitations at the end of a track at a station. If it keeps right on past its limitations it may smash the station. Standardization reaches limitations when it smothers individuality. Some of the labor unions furnish an object lesson. Picture Darwin standardized to fit the thought of the Established Church of England of his day.

Surgeons, being human, cannot escape human movements and behavior. Whenever we have a high degree of civilization a great deal of painstaking attention is required before men can reach the common level in any sort of professional work. What does this mean in our profession? It means that by the time when all doctors are pretty well agreed upon the desirability of any one resource they are often behind the times. The very best men get behind the times for the reason that their good qualities, recognized by so large a part of the community, have brought them so much occupation that it has been impossible for them to follow new leaders of thought. They are prone to depend upon tradition. Tradition is the greatest of guides for minds of the mean type and the meanest of guides for minds of the great type. Neurology and psychiatry were beginning to make progress along the lines of objective teaching of Virchow when along came the blight of Freudian mysticism throwing many psychiatrists back to the days of Schelling and Hahnemann in the middle of the last century. Surgeons were getting fairly under way with the principles of the fourth era of surgery when along came the rubber glove acting as a blight upon a rapidly growing subject. Almost all fads have a basis in good fact. The rubber glove had a large basis in good fact, representing one of the most important advances in sur-

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gery. It reached limitations, ran off the track, and exerted destructive influence upon the fourth era of surgery in its relation to abdominal work. It is in this particular field that the rubber glove is behind the times.

What is the fourth era of surgery? The first era was heroic. Then came the anatomic era. Following the anatomic era, Pasteur and Lister introduced the third or pathologic era. That, was the one in which the surgeon disregarding Nature's resources, attempted to remove bacteria and their products by means of his own resources. He conscientiously acted like the faithful ape that tried to destroy the fly upon his sleeping master's forehead, using a big stone for the purpose. Wright and Metchnikoff then gave us materials which allowed us to construct the basis for a fourth or physiologic era of surgery. That era into which we are just now emerging gives the patient Home Rule. The patient is turned over to himself with the least possible degree of injury to his natural protective resources. He is allowed to manufacture phagocytes and opsonins freely and this he does when there has been the least degree of shock to throw the belt from the wheels of his endocrine machinery.

With the introduction of the rubber glove came the longer incision in abdominal surgery. We could see incisions grow in length as rubber gloves became more and more widely adopted. Abdominal surgeons lost their cunning because the sense of touch was interfered with to such an extent that it became necessary for them to do much of their work by the sense of sight, a sense that is recognized as standing second rate to the tactile sense in certain matters of precision. Before the days of rubber gloves there were surgeons, to be sure, who used long incisions and who worked by sight in abdominal surgery, but these were not the ones who had the best results. In that day surgeons, like Lawson Tait and Joseph Price, who worked through small incisions rapidly were the ones who had the best results; Tait, in particular, not only disregarded rules of asepsis and antisepsis but openly railed at them. We could not understand the meaning of the good results of Price and Tait at a time when the colleges were teaching the principles of asepsis and antisepsis. Today we know. The principles of the fourth era of surgery were empirically brought into play by surgeons who worked rapidly through small incisions.

In order to determine the degree to which rubber gloves actually interfered with the tactile sense, I had tests made by an expert upon several physicians and surgeons. The tests all showed a lowering of the tactile sense, even on the part of very expert surgeons and, curiously enough, the physician who stood highest in the tests was not a surgeon but a specialist in the diseases of children.

Dr. T. L. Bennett, the anesthetist, has stated that according to his observation the best surgeon is the one who acts all the while as though he were afraid of waking the patient. Long incisions and thorough examination of viscera wake the patient. Deeper anesthesia becomes neces-

sary. In natural sequence perhaps to the long incision and working by sight came the later development of thorough examination and exploration of the abdomen with the surgeon's hand introduced through the incision. This in turn had a tendency to lessen the cunning of the diagnostician. It is the forte of the diagnostician to make accurate conclusions in regard to the sites of disturbing factors in advance of operation. When this has been done one or two small incisions frequently allow work to be done more gently and rapidly and more directly to the purpose than is possible through a long comprehensive incision.

No method in surgery is static. We change from one method to another. We have done this in the past and will continue to do so for thousands of years to come. It is my belief that the long incision which belongs to the rubber glove is not static. Surgeons will awaken again to the principles of the fourth era of surgery which, like objective psychiatry, has received a temporary set back.

Does the rubber glove lessen the number of bacteria that are actually carried into an abdominal wound? We may answer that question by way of an object lesson offered by the exposure of culture media in Petri plates in the operating room. The larger the Petri plate the more complete the infection of its contents. The longer the exposure of the Petri plate the more complete the infection of its contents. This infection comes from where? From bacteria falling from the air into the culture medium. More bacteria fall into a large abdominal incision from the air than are carried in by well prepared hands wearing no rubber gloves. We must remember that most of the bacteria which fall into a wound from the air or which are carried in by the hands are destroyed or at least rendered latent by the enzymes of the wound. In addition to the shock caused by the long incision and by thorough examination of viscera, danger from emboli and from postoperative adhesions is greater in degree proportionately to the length of the incision and the length of time expended in operating.

Dr. J. W. Kennedy of Philadelphia, states that in a review of one thousand re-operations of the abdomen in his own experience ninety-nine per cent showed adhesions to the scar or in the immediate neighborhood of the scar in patients who had been operated upon previously by men who wore rubber gloves. He states that in his own work only seven per cent of re-operations showed any signs of adhesion to the scar or in its vicinity. Some of the ninety-nine per cent of incision line adhesions were doubtless due to the employment of irritating antiseptics for skin preparation of the abdomen. Iodine, for example, valuable as it is, if not removed with alcohol in advance of operation will do to endothelium what it does to epithelium. This fact does not lessen the force of the idea that the longer an incision the more injury to endothelium.

Rubber gloves have incidentally been a factor in making this a day of instruments in the abdominal cavity. We are prone to forget that the peritoneum with its lymph system is better equipped than is the

skin for resisting infection. The extent to which the peritoneum will ward off or control infection is remarkable provided that it is not shocked by a blow below the belt. The peritoneum may even wall in material which escapes from a perforated appendix or pylorus or typhoid bowel. Many a surgeon knows this fact but he keeps it walled in. He might have a chill if the fact were suddenly to break through into his thought cavity.

In cases of appendicitis with abscess the plan of making a short incision and of running when pus ran reduced the death rate to such an extent that Dr. L. W. Hotchkiss of New York had a series of seventy-six appendicitis operations without a death at a hospital in which the previous death rate in the same class of cases had been thirty-one per cent. In pyosalpinx cases, when working through a short incision after the first acute stages of infection have been brought under control, one may shell out the damaged tubes, split them and fasten them to the anterior abdominal wall and allow the pus to pour out of that exit until the patient responds to vaccine treatment. Six months afterward the abdomen may be reopened, adhesions separated, and the tubes or remains of tubes dropped back into the pelvis, and the patient may then have children. It is true that some of the pregnancies will be extra-uterine but the patient, warned of that, is not in great danger because we easily care for an extrauterine pregnancy in its early stages. On the other hand there will be more happy mothers with good babies borne than we find to be possible when a surgeon wearing rubber gloves and working through a long incision commits devastating surgery in the pelvis.

In cases of acute typhoid bowel perforation or gastric ulcer perforation, a two minute operation by a surgeon wearing no gloves will give better service than a thirty-minute operation on the part of a surgeon wearing gloves and working by sight.

Do not mistake the intention of this paper. It does not stand in opposition to the idea of the rubber glove which, in my opinion, represents one of the best advances of the surgery of the day. Personally I use the rubber glove, observing the latest decrees, in practically all of my surgery, with the exception of the peritoneal cavity and when dealing with malignant disease. The rubber glove is behind the times when it comes into conflict with the principles of the fourth era of surgery in abdominal work. If conscientious surgeons are behind the times today in their employment of rubber gloves in abdominal work it is not their fault, it is the fault of a public which fails to endow our educational institutions in such a way as to teach young surgeons among other things the difference between the peritoneal cavity and the synovial cavity of the knee joint in regard to their respective responses to injury, mechanical or bacterial.

THE GEHRUNG PESSARY FOR THE RELIEF OF CYSTOCELE*

BY EDWARD J. ILL, M.D., F.A.C.S., NEWARK, N. J.

IN Vol. XIII, page 513 of the *American Journal of Obstetrics and Diseases of Women*, there appeared an article on "The Mechanical Treatment of Cystocele and Procidentia Uteri" by Eugene C. Gehrung of St. Louis. How much attention was paid to that excellent paper we do not remember. Suffice it to say that contemporary gynecologists know little about it, and still less about the use of Gehrung's pessary, which in our hands has been so valuable in the relief of many patients.

The writer is aware that papers which do not describe new operations are rarely popular. But now and then it is wise to hearken back to the older writers and find out what they did to relieve suffering women when gynecologic operations were in their infancy and fraught with great danger. The writer has lived through the period when the pathology and anatomy of the pelvic organs was little understood. Treatment was often empirical and not founded on a true understanding of the pathology. The writer does not say that we, at the present day, know it all, there is still much to be learned. Let those who ridicule the forefathers beware that a like punishment may not fall upon themselves. The more we advance in years the greater becomes our respect for our predecessors. Instruments of precision were few. The laboratory, the refuge of the unobservant, did not exist. Physiology, the clinical picture, and the physiognomy of disease, were the main reliance in diagnosis. All these cannot be supplanted by the laboratory. The writer has no desire to decry the laboratory and in his own community he was the first to develop and employ its facilities. This acknowledgment is made so that he may not be misunderstood in his advice to hearken back to the older authors in looking for relief for his patients when operations are out of question. Among these we find the old and decrepid, those with decompensated cardiac disease, and those with diabetes or advanced renal lesions. Then we have those with pulmonary affections contraindicating anesthesia, and lastly the timid ones.

The writer has not grown timid in his latter days. His enthusiasm often needs the curbing of sounder judgment and often reconsideration, and he never forgets the rule: "put yourself in the patient's place." To introduce to you so old a subject as the Gehrung pessary needs some excuse; but more than that, a deep-seated and mature consideration of its value. There are many expert gynecologists who decry the use of any pessary because of ignorance or selfishness, or because they be-

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lieve it is harmful. Let that be as it may. A rehearsal of the case that prompted this paper will suffice to act as an excuse for its infliction. Mrs. E., aged fifty-six years, was referred January 3, 1914, by a Pittsburgh friend and a gynecologist of high standing. She had changed her domicile temporarily from that city to one in the writer's neighborhood. She had suffered much with cardiovascular disease and a cystocele that gave her great annoyance. She was a heavy, stout woman, who soon grew cyanotic on the examining table. Her systolic blood pressure was 220, though her urine was fairly normal. An operation was out of question, and this my Pittsburgh friend had already decided for me. We introduced a well fitting Gehrung pessary in her case, which not only gave her great relief, but made exercise so bearable, that it improved her general health. Of course the instrument was carefully looked after, as all pessaries should be.

In due time she returned to Pittsburgh to find that her doctor could

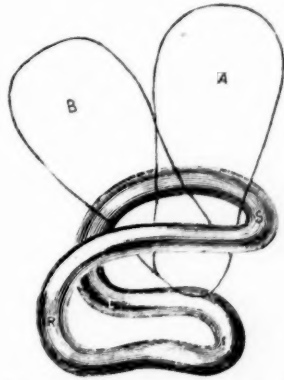


Fig. 1.—Showing position of the Gehrung pessary in relation to the uterus (*A* and *B*). *S*, Symphyseal end; *L*, left; *R*, right arm.

not replace the instrument after he had removed it. He had never seen such an instrument. And well might a man be puzzled with it. The woman returned to Newark to have the instrument replaced. Later her family moved to Virginia, near Washington, but to my dismay she again returned to Newark because no one could be found to replace the instrument properly.

It is not the writer's intention to read to you his views as to the interposition operation of Watkins; suffice it to say that nothing has given him greater satisfaction, and to his patients greater relief, unless it be the operation for vesicovaginal fistula or the repair of a complete perineal laceration. You will understand, therefore, that this form of pessary is purely for those cases where an operation is not advisable.

The pessary consists of the Hodge instrument bent on itself so as to form a double horseshoe, one lever being a little shorter than the other. Its object is to hold up the anterior wall of the vagina and, with it, the bladder. Dr. Gehrung's views of the causation of the cystocele are

based on the hydraulic pressure extended on a vagina which had lost its anterior fixation. In his own words: "If the bladder can be returned and held in its normal place, the procidentia as such must be cured." There are some cases where the pessary will not do what we expect of it, nor will it even be tolerated. First among these is extreme relaxation and atrophy of the pelvic floor; second, deep, hard, and unyielding scars in the lateral fornices; third, the atrophic vagina as shown by its stringy character; and last, the various forms of procidentia with their concomitant hypertrophy. To men of experience this needs no further elaboration.

The position of the pessary is such that the smaller horseshoe or lever will be placed anterior and below the cervix, while the larger one will be just above the neck of the bladder. The junction of the two horseshoes will remain in both lateral fornices. To fit well the pessary should be freely moveable and not felt by the patient on walking or sitting down. In fact she should not be conscious of wearing the instrument except that she is comfortable, that she has lost the dragging sensations and the irritable bladder.

The introduction of the instrument is rather difficult to describe. The pessary is held between the thumb and the fingers of the right hand by the rounded end of the horseshoe, the smaller one being forward. The connection between the horseshoe to the patient's left is introduced first and then with a rotary motion of 180° the whole pessary is slipped into the vagina where another rotation of 180° will put it in place. Care should be taken that neither horseshoe slips behind the cervix in which case it will have to be removed and reintroduced, for the cervix will form a bar over which the pessary cannot be slipped. Its position is best shown by Gehrung's woodcut or by the illustration in the Tieman & Co. catalogue. It goes without saying that experience and trial only can determine the proper size of the instrument to be used for each case. It is better to start with a small size pessary and allow the patient to walk about the office as a test, than to use a large size instrument which may produce pain and injury. Gehrung says: "The pessary acts by a close application to the anterior and lateral walls of the vagina. It gets its inferior support on the lateral parts of the perineum." Those who will take the trouble and patience to master it will find great satisfaction for themselves and secure immeasurable relief for their patients. The great objection to the pessary is that while the patient can remove it she cannot replace it, Gehrung to the contrary notwithstanding.

It is not within the province of this paper to criticize that which we take to be in error in Gehrung's paper. Possibly it will be better to say that we have not been able to do all that he has succeeded in doing. My object is simply to show how we may hold up the anterior wall of the vagina with a properly fitted Gehrung pessary.

ENDOCRINE INFLUENCE, MENTAL AND PHYSICAL, IN WOMEN*

BY JAMES E. KING, M.D., BUFFALO, N. Y.

MUCH of what is known in medicine has developed from theory. In every branch of medicine theory has formed a basis for observation and experimentation, leading to the establishment of some of the most important facts. Theories may arise entirely from the imagination, or, as is usually the case, a few known facts may inspire and suggest the theories from which are evolved the missing facts necessary to complete the knowledge. Even theories disproved possess in a negative way great value. Granting, therefore, the importance of theory in the progress of medicine, it is justifiable when all facts are not known, to evolve theories to interpret the phenomena of health and disease. Let this, therefore, be the excuse for presenting some fact and much theory upon the subject of the endocrine system and its influence upon the mental and physical characteristics of woman during her reproductive life.

At present no question in medicine is receiving greater and more deserved attention than the ductless glands. Twenty-five years ago they were not suspected of having any important function; today we are ascribing to the activity of these glands many mental and almost all physiologic processes and every department of medicine is seeking to establish its relationship to the endocrine system. The subject affords an interesting and fruitful field for speculation and experimentation and, as a result of the efforts of a host of observers, some real knowledge is being accumulated. Every new fact affords a nucleus for new theories, until the student of endocrinology now finds himself wandering in a hopeless maze.

The biologist has reduced the laws of life to two great fundamentals; the preservation of self and the propagation of kind. For self-preservation are found various adaptations for self-protection, to which may be added the elaborate mechanism for metabolism necessary to existence. The higher in the scale of animal life, the more complicated these processes, until in man is found a brain capable of reasoning, by virtue of which he has attained his position superior to all other forms of life. There is now no question as to the influence of the ductless glands upon man's vital physiologic processes, and recent studies are making it apparent that the endocrine system in all probability is also the basic factor in shaping and influencing his mental processes and emotions. Thus

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rage and fear, so essential to self-preservation, in the lower animals as well as man, are manifested in physical reactions brought about by an increased discharge from certain of the ductless glands. If, therefore, it may be conceded that self-preservation depends upon the endocrine system, one can even more willingly concede the influence of these glands upon reproduction. Indeed, the earliest knowledge of the ductless glands was the rôle they played in the development of the secondary sex characteristics and their function in reproduction. More than a suspicion now exists that from them originate also the various emotions and mental states accompanying reproduction. It would seem, therefore, that we may, with no stretch of the imagination or violence to reason, concede that the endocrine system is of fundamental importance in the fulfillments of the two great laws of nature and in man is the activating influence in the mental processes growing out of these laws.

In a discussion of any subject bearing upon the ductless glands, certain facts and theories must be kept clearly in mind. Of these the foremost is the fact that there exists normally between the glands a most intimate and well balanced relationship. Abnormal or perverted secretion of one gland means disturbance and necessary readjustment of the others. Theory explains this interrelationship by assuming certain activating and inhibitory influences exerted by one gland over another. Another fact well established is that the action of these glands is produced by the introduction into the circulation of a biochemical substance of the greatest potency. It has further been clearly demonstrated that the same or an allied active principle may be found in two or more glands, which increases the difficulty and adds to the confusion in understanding their individual action. That mental processes may be influenced and determined by the secretion of the ductless glands rests largely on theory, but observation in health and disease has given such clear proof of this in some instances, that it justifies our assuming much more. It is not difficult to believe that human action may be prompted and influenced by a substance in the circulation, if the effect of morphine, atropine, cocaine, alcohol and other drugs is borne in mind. One of the best examples of the effect of the internal secretion on mentality is noted in acromegaly. Early in the disease, during the period of hyperpituitary secretion, the individual becomes alert and keen in all his mental processes, and may exhibit even unusual mental power, but when hypergives way to hyposecretion he quickly becomes dull and stupid. The mental improvement in the cretin under the administration of thyroid also bears upon the subject. Cushing and others have even called attention to certain types of mental derangement which may be due to or largely influenced by perverted glandular secretion. In estimating, however, the effects of internal secretion upon the mind, confusing and conflicting deductions may be drawn, unless one gives proper values to the influence exerted by education, environment, and custom.

By reproduction in mammals, is understood the fertilization and development of the ovum and its expulsion at maturity. In the human species, however, reproduction comprehends much more. It really includes all of the associated factors which lead up to and make possible fertilization. This would recognize in both sexes the influence of the mental and emotional states which accompany the various phases in reproduction and in the female the phenomena of the menstrual cycle. With the exception of love, which is really only the intellectual refinement of ovarian and testicular influence, the emotions associated with reproduction have received scant consideration. The observing student, however, will find plausible explanation in the ductless glands for some of the curious mental states exhibited by women.

The beginning of the reproductive life in both male and female is designated as puberty. Up to this time the male and female are much alike mentally and physically, but with the appearance of secondary sex characteristics the two sexes diverge widely. The male is attracted to the female and his sexual impulses inspire love and passion; physically, he is capable of impregnating. After his reproductive life is once inaugurated, however, it is marked by no physiologic events other than the impregnation of the female. Gradually his reproductive powers wane until he finally becomes impotent at an age varying in different individuals. In the female, puberty is marked by more clear cut physical and mental changes. There is established at this time the reproductive cycle, which continues until the age of forty-five, when her reproductive powers are brought suddenly to a close. During this period of thirty years her life is punctuated by menstruation, pregnancies, child-bearing, and lactation, and finally, with more or less disturbance, she passes through the menopause. A woman's physiologic processes, therefore, after satisfying the requirements for her existence, are for this period manifestly consecrated to reproduction. A woman for thirty years may be regarded as a reproductive machine whose mechanism is in constant action and which only waits to receive the proper stimulus to turn out a finished product. There are marked physical reactions in the various phases of the reproductive cycle, and it is therefore not unreasonable to expect evidence of mental reaction as well.

MENSTRUATION

The physical changes in the female at puberty are matters of such common observation that they need not be discussed here. Every thoughtful student, however, asks himself why at the age of fourteen these changes should take place. A plausible basis for the answer is found in the results of experimentation. In young animals removal of the thymus causes precocious sexual development. It has also been shown that removal of the posterior lobe of the pituitary in animals, or disease of this gland in man, results either in failure of the sex characteristics

to appear, or in reversion to the infantile type, depending upon the age of the animal or individual observed. These are undisputed facts which clearly establish the relationship of these glands to each other and the important rôle they play at puberty. It may be assumed that the thymus during the years of childhood exerts an inhibitory influence upon the pituitary. Gradually thymus atrophy takes place, being more or less complete at the age of fourteen. The pituitary being thus released from the restraining influence of the thymus, becomes active and stimulates the ovary. This results in the activation of the interstitial cells, and the consequent development of the secondary sex characteristics. The corpus luteum develops from the Graafian follicle and menstruation and ovulation are now established. Not only does the pituitary initiate these changes, but it is also necessary for the continuance of normal ovarian function. So important is this relationship that the pituitary in large measure is to be regarded as a sex gland. During the past few years it has been established that the corpus luteum also has a distinct secretion. In 1914 Seitz, Wintz and Fingerhut presented a series of studies in which they claimed to have isolated from the corpus luteum two distinct substances, one of which influences the time of menstruation and the other the amount of flow. If their observations are correct, certain types of abnormal menstruation find ready explanation.

The mental states associated with puberty and menstruation are interesting. At puberty the girl acquires quickly the mental attributes of womanhood. There naturally exists in different races and states of civilization a wide range of modification, but in all may be seen the transition of the child mind to the mind of woman. The girl of every race becomes self-conscious, and through the influences of civilization and education this self-consciousness develops into what we term modesty. The tendencies shown by the girl after puberty are also of considerable interest. In some are seen the fondness for out-of-door life and rough sports, while others are indolent and satisfied with a life of inaction. There is good reason to suspect that such tendencies are determined largely by internal secretion, the thyroid probably playing an important part. The mental states during menstruation are often most striking. Frequently there is a tendency to melancholia and impairment of mental efficiency. Such manifestations are so common that they may be regarded as normal. Beyond these normal manifestations there are varying degrees of mental disturbance. The most common of the more pronounced effects is the exhibition of suspicion and unreasonableness, which in certain women may attain the degree that the alienist characterizes as "psychic hysteria." These women at menstruation are utterly unreasonable and illogical. They deliberately construe every act and word into a meaning widely different from that intended. The most trivial and innocent remark of others will be distorted and perverted in such a way as to awaken a sense of injustice and self-pity.

Tears and anger alternate and often physical violence is attempted. Women who ordinarily are sweet tempered and lovable are at these times so entirely changed that they become the feminine prototype of a Dr. Jekyll and Mr. Hyde. One of the curious accompaniments of these states is the physical expression of the mental condition seen in the tendency to work. Women under this influence are restless and will work from early until late at the most strenuous menial labor. Remonstrance from the household calls forth perhaps a flood of angry tears, and only sheer exhaustion will at length compel them to the rest which finally restores them to normal. Results obtained from the experimental study of the action and influence of the adrenals in anger and various forms of physical exertion, would suggest that in the disturbed endocrine balance of these women at menstruation a hyperadrenalin secretion takes place. Another manifestation analogous to the last, but somewhat differently expressed, is seen in those women whose principal symptom is an intense headache, accompanied usually by vomiting. These women are completely incapacitated and each period is anticipated with dread and fear. The condition in some respects bears a close resemblance to a migraine and would indicate some cerebral vasomotor disturbance. The fact that removal of the ovaries cures these patients points to a perverted secretion of the corpus luteum as the probable causal agent.

Beside the disturbances clearly traceable to menstruation it has been well known that all mental conditions and tendencies are much exaggerated during the menstrual period. In the interesting book of Havelock Ellis it is stated that Lombroso found out of eighty women arrested for opposition to the police or for assault all but nine were menstruating at the time. Krugelstein stated that in 107 instances of suicide in women which had come under his observation in all the act was committed at the menstrual period. While so great a number would not be found in every series of suicides in women, in a very large percentage this would be true.

PREGNANCY

The physical evidences of glandular activity during pregnancy are most striking and profound. Not only are seen marked changes pertaining directly to the reproductive system but also changes in metabolism. A woman during pregnancy is on the threshold of pathology and it would appear that her border line position might be accounted for by an imperfect readjustment of her endocrine balance. Sajous has argued convincingly for the value of normal adrenal and thyroid secretion in infections and it is not unlikely that the derangement of these glands in pregnancy accounts for the subnormal resistance to infectious diseases shown by pregnant women. Perhaps here we have the explanation for the high death rate among pregnant women during the recent influenza epidemic. The relationship of the

ductless glands to pregnancy is almost an untouched field. It is only in the occasional departure from normal that we are permitted to obtain a glimpse of the wonderful and powerful forces that inaugurate and accomplish those marvelous changes associated with gestation. We stand helpless to explain the complex and subtle influence exerted by these forces, for our knowledge is not yet sufficient to even inspire our imagination to evolve reasonable theories. How shall we explain the breast changes during pregnancy? It surely bespeaks the activation of the mammary glands by some powerful influence, but we can only theorize on the probable source. And what of the enlargement of the thyroid? Is such hypertrophy a compensatory one to furnish a substance to neutralize the increased and unusual toxins elaborated by mother and fetus? There would seem to be much to indicate that this is the case. The influence of the adrenals is seen in the normal and exaggerated pigmentation, but who shall say why or how? Our knowledge of the influence of the pituitary during pregnancy is based upon some real facts, and it is now possible to ascribe to this gland certain manifestations of disturbed metabolism seen during, and following in the wake of pregnancy. The changes in the pituitary itself which take place in pregnant animals are now known to be duplicated in woman. The enlargement of the pituitary which occurs is undoubtedly due to the characteristic pregnancy cells. Just what influence these cells exert is not known. An unusual hypertrophy of the gland so great as to cause pressure upon the optic nerves, accounts for certain instances of total or partial blindness sometimes encountered. The rapid increase in weight so commonly noted in pregnant women indicates a disturbed carbohydrate metabolism of pituitary origin. In this connection Cushing has pointed out that in some of these women may be seen thick lips and a dull expression, accompanied by high sugar tolerance, suggesting acromegaly.

The reason for the onset of labor has been a question that has perplexed the physiologist. There will one day probably be proof that uterine contractions at term are initiated by a liberation of pituitrin through the withdrawal of some inhibiting influence exerted upon the gland during pregnancy. There is even now very good reason to regard the corpus luteum as the source of the inhibiting agent.

When one considers the physical readjustment which takes place during pregnancy and the pleasurable anticipation or dread which such a condition inspires, it is not surprising that every thoughtful woman of normal intelligence should pass through the experience with some mental reaction. Normally every woman is endowed with a love of offspring, but these natural impulses and feelings may be entirely dominated and submerged by social influences. It is unfortunate that environment, conventions of society, and the struggle for existence, should sometimes determine the mental state of pregnant women. Happily, however, the

natural tendencies usually overbalance these artificial influences. Women who in the early weeks of pregnancy are willing to undergo any danger to be rid of pregnancy, as term approaches gradually experience a change of feeling and at delivery are reconciled and happy. We are enchanted by the great mother love displayed by the lower animals. We do not assume that in animals such a protective love is based upon intelligence or reason, so we characterize it as mother instinct. Equally striking is the sudden revulsion of feeling which is observed when the young have reached an age to care for themselves. The mother dog renounces her puppies and snaps at them; the hen, who has expended so much protective care on her chicks, will suddenly drive away the brood which she has so faithfully provided for. Undoubtedly this so-called instinct arises from some secretory influence, probably the pituitary, which for a time prompts the mother love. As the young grow it is provided that the stimulus for mother love be withdrawn and the pituitary relapsing to normal, the animal cares no more for her young and the reproductive cycle is again begun. We have no justification for a belief that the human species is devoid of such an influence. In man's conceit it is pleasant to attribute mother love entirely to the intellect, but unquestionably the impelling force in woman is the same that is found in the lower animals, but one which is glorified by a reasoning intelligence.

Another attribute of the mother that stands out prominently, is courage. The hen is known to be a timorous bird, yet when caring for her brood of little chicks she will exhibit most extraordinary courage in the face of overwhelming dangers. The same is noted in other animals. We cannot attribute this courage to reasoning. It must be the result of some physical stimulus which prompts these animals to this unusual action. Indeed, so strong is this stimulus that often a mother will give her life in the protection of her young. It would seem that the influence which inspires a mother's love may even reverse the natural order of the two fundamental laws and the first great law of nature be relegated to second place.

Bearing upon the mental states of women during pregnancy is a curious manifestation which comes within the scope of pathology. Two years ago the writer described this condition and gave to it the name of "pseudocyesis of hypophyseal dystrophy." It presents a cleareut syndrome and is characterized by rapid increase in weight, perhaps fifty or sixty pounds within a few months. Menstruation either ceases or is much diminished in amount and frequency. The facial expression becomes listless and the woman has little strength and endurance together with the high sugar tolerance that is seen with pituitary derangement. The outstanding feature, however, is the peculiar obsession of pregnancy. These women will cling tenaciously to a belief in pregnancy in the face of expert testimony which ordinarily would convince them. The physician

who questions the diagnosis is a fool and the woman continues her preparation for the labor. At a time which she believes to be term the doctor and nurse are often summoned and it is only when no baby comes that the proof is sufficient to destroy her hope. The underlying condition of glandular disturbance in these patients is usually overlooked and the physician is only consulted concerning the pregnancy. There is much argument in favor of the deranged pituitary activating the mental state of these women. An analogy may be found in the hen who wants to set and who persists in her attempts despite the strenuous and vigorous means used to convince her of her mistake.

MENOPAUSE

Every woman looks forward to the change of life with some apprehension. In the physical changes noted at this period can be seen unquestionable endocrine influence. Inasmuch as the same change may be brought about by removal of the ovaries in young women, it is unquestionably the loss of ovarian secretions that accomplishes the physical changes. The question as to whether the ovarian atrophy is a result of some influence emanating from other glands has not been settled. So far as is known today, the ovaries atrophy much as does the thymus at the earlier period of life. On account of the intimate relationship of the ovaries and the other glands of internal secretion, withdrawal of ovarian secretion would naturally result in some disturbance of the other glands. This may be evidenced either in hypo- or hyperactivity. The most common, however, is the hypothyroidism indicated by increase in weight and the tendency to uterine bleeding and in extreme cases the picture of myxedema. The vasomotor effects as shown in the so-called "hot flashes" suggest the adrenals as a participating factor.

The mental states seen during the menopause are well known and are characterized by a tendency to melancholia and even insanities. It is a common observation that women whose mental balance is not secure are especially prone at this period to develop emotional insanity. There can be no question but that in a certain number of instances the mental state is precipitated by the disturbance of the endocrine balance.

Woman has never been understood by man. She is a creature swayed by moods and impulses. She may attain virtues to which no man can aspire or she may sink to depths unfathomed by his imagination. We pay tribute to her virtues and marvel at her iniquities. For ages she has been the theme of poet and philosopher but neither imagination nor wisdom has solved her. Shall we not perhaps find the answer in a better understanding of these subtle influences which determine her physical life? Can we expect the periodic readjustments of so delicate a mechanism operated by such powerful interdependent forces to functionate ever smoothly without some physical or psychical reaction? We

cannot expect to understand woman until we have fathomed these forces that inspire her impulses and dominate her existence. The wave of feminism that swept over the country raised a disquieting fear in the breast of some timid souls that man's place would be usurped by woman. There may appear from time to time an unmarried female who by reason of education and sheer force of will is able to dominate her internal secretions and assume certain prerogatives of man but never until evolution has eliminated her present endocrine glands will woman be other than she always has been. The rôle she plays in life's scheme has too many changes and keeps her too occupied to permit of the mental adaption necessary to a new order of things. Man should therefore view with kindly forbearance the futile effort of woman to overcome by her will the very powers that shape and control her mental processes.

But after all it would really seem that woman is the more important in life's plan. It is woman who activates man to all he does and all he thinks, and is it therefore fitting that we should feel a supremacy? But if we do assume that supremacy we should with all the more reason regard with indulgence those occasional aberrations in the orderly operation of her endocrine system and exclaim in a paraphrase of the well known line

“Woman with all thy glands we love thee still.”

1248 MAIN STREET.

(For discussion, see p. 378.)

DOUBLE FLAP LOW CESAREAN SECTION RESULTS*

By THURSTON SCOTT WELTON, M.D., F.A.C.S., BROOKLYN, N. Y.

FROM November, 1919, to August, 1920, the author performed the double flap low Cesarean section eleven times. Seven of the eleven patients were potentially infected at the time of operation. With many operators the indications would have justified them to sacrifice the life of the child, and perform craniotomy instead of opening the abdomen.

Although the majority of these women were potentially infected at the time of operation and, although six of the number were infected, according to the temperature charts following the sections, not a single case of peritonitis occurred and the maternal mortality was *nil*.

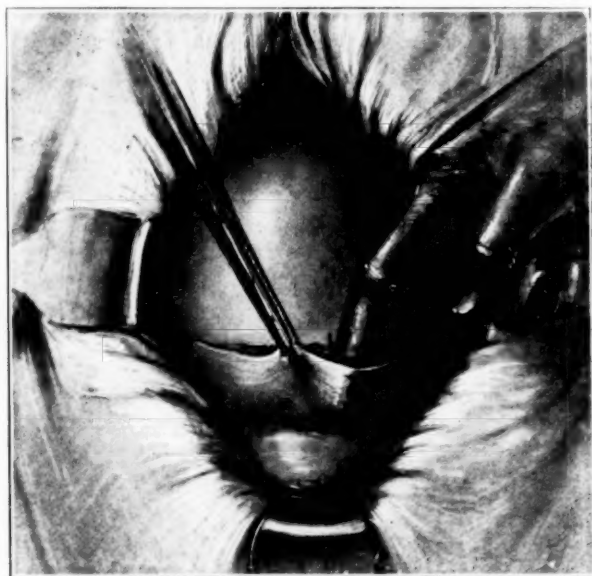


Fig. 1.--Loose peritoneum in region of bladder cut transversely making the lower or inferior peritoneal flap.

It was my privilege to observe Drs. J. O. Polak and A. C. Beck, working at the Long Island College Hospital, operate upon a large number of patients according to the special technic referred to. Their results were so impressive that I began to do this type of operation in cases where Cesarean section was the indication of choice.

Beck described an operation in an article entitled "Observations on a Series of Cases of Cesarean Section Done at the Long Island College

*Read at the Thirty-third Annual Meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons held at Atlantic City, N. J., September 20-22, 1920.

Hospital During the Past Six Years." (American Journal of Obstetrics, Vol. lxxxix, No. 2, 1919), of which the essential features include a low abdominal incision, stripping the bladder with its peritoneal covering from the lower segment of the uterus, dissecting away the peritoneum from the uterus above the bladder incision, incising the uterus in this exposed area, delivering the child, closure of wound in uterus and overlapping the peritoneal flaps so as to seal the uterine wound.

In all my Cesarean cases I have employed the transverse incision of the abdomen just above the pubes. To date the results have been satisfactory. All have healed by primary union. We have observed no hernia

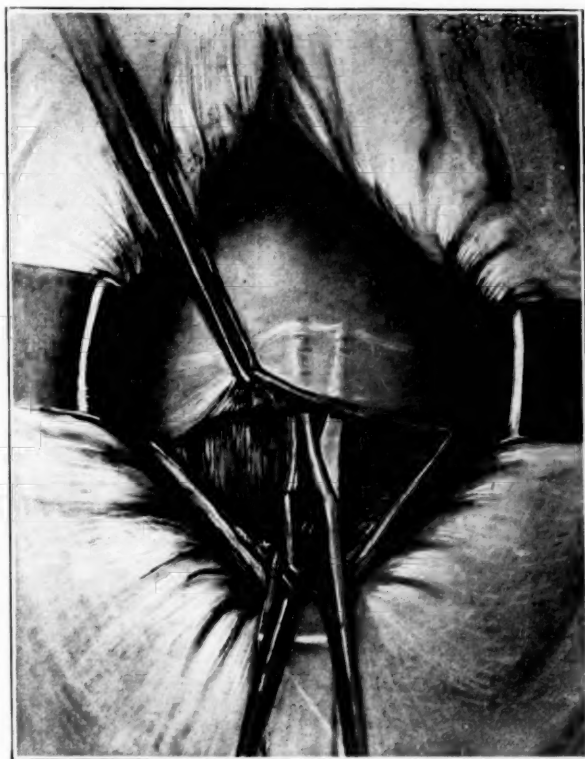


Fig. 2.—Upper or superior peritoneal flap made by dissection with blunt-pointed scissors.

upon discharge from the hospital. I have placed the traction-sutures, one in the lower and one in the upper angle of the uterine incision, prior to opening the uterus. An assistant holds these sutures taut thus facilitating the placing of the first row of deep sutures.

The postoperative treatment consists in a low Fowler position of the bed, an ice-cap to the fundus of the uterus, which is possible only in this type of section as the fundus is above the abdominal dressings, and a dose of pituitrin or ergot. Because of the low situation of the dressings, the fundus of the uterus may be held by a nurse or an assist-

ant to prevent postpartum hemorrhage the same as after a spontaneous delivery.

CASE REPORTS*

CASE 1.—No. 12626. Primipara. In labor three days. Membranes ruptured two days. Family physician made from four to six examinations a day through an unclean vulva. Physician wore no gloves and washed his hands after rather than before the vaginal manipulation. Patient potentially infected at time of operation. Temperature was 100.3°F. on third and fourth day after the operation, and 99.4°F. on fifth day. Infection doubtful. Dismissed from hospital without pelvic pathology.

CASE 2.—No. 12842. Primipara. In labor 32 hours. Membranes ruptured seven hours. No vaginal examinations had been made. Not classified as potentially infected. Patient ran an uneven temperature, 100°F. to 101°F., for seven days which reached the normal the ninth day. Dismissed from hospital with negative findings.

CASE 3.—No. 12877. Primipara. In labor twenty-four hours. Membranes ruptured about ten hours. Three vaginal examinations through prepared field. Potential infection prior to operation doubtful. On fifth day temperature reached 100.2°F. Normal temperature on the sixth day and thereafter. Actual infection doubtful. Negative pelvis on dismissal.

CASE 4.—No. 12950. Para III. Ambulance case. In labor thirty-two hours. Membranes ruptured over twenty-four hours. Family physician had examined her "many times" through an unprepared vulva. Had had a previous Cesarean section. Potentially infected at time of operation. Temperature and pulse chart shows actual postoperative infection. Ran an uneven temperature for nine days. On three occasions temperature reached 101°F. with pulse 120. Negative findings upon dismissal from hospital.

CASE 5.—No. 14701. Primipara. Seen by author in consultation. In labor sixteen hours. Membranes ruptured nine hours. Two vaginal examinations through prepared field. Physician wore sterile gloves. Patient was not considered potentially infected at time of the operation. Ran an uneven temperature, between 99°F. and 101°F. for ten days. Diagnosis of infection after operation. Findings were negative upon dismissal from hospital.

CASE 6.—No. 14158. Primipara, forty-two years old. In labor thirty-six hours. Membranes ruptured ten hours. Two vaginal examinations through prepared vulva. Physician wore sterile gloves. Not considered infected at time of operation. On sixth day temperature suddenly reached 100.3°F. and as suddenly returned to normal. No postoperative infection. Negative pelvis upon leaving hospital.

CASE 7.—No. 17138. Primipara. Not in labor. Membranes not ruptured. Many vaginal examinations and attempts at induction of labor by family physician. Ran uneven postoperative temperature, ranging between 100°F. and 103°F. for first eleven days. On the twelfth day temperature reached 104°F., pulse 124. Temperature fell to normal on fourteenth day and after that varied from normal to 99.3°F. until time of dismissal from hospital. Final examination revealed a parametritis.

CASE 8.—No. 17598. Primipara. Patient in labor forty-two hours. Membranes ruptured twenty-four hours. Many vaginal examinations through an unprepared field. Patient potentially infected at time of operation. Uninteresting chart until sixth day, when temperature went to 101.3°F. On eighth day temperature 103°F., and on ninth day 104°F. Uneven temperature until thirteenth day after the operation, when it reached the normal. Patient insisted upon going home on 17th day. Family phy-

*Cases 1, 2, 3, 4, 5, 6, 10, and 11 are from the Greenpoint Hospital; Cases 7 and 8, from the Williams Hospital; and Case 9, from Long Island College Hospital.

sician instructed regarding treatment. Last report six months later, patient still had symptoms of chronic pelvic infection.

CASE 9.—No. 902. Primipara. Aged forty-two years. In labor twenty-four hours. Membranes ruptured twenty hours. Many vaginal examinations through an unclean vulva. Patient potentially infected at time of operation. Between fourth and tenth days after the operation she ran an uneven temperature between 100°F. and 101.4°F. On dismissal tenderness on both sides of lower abdomen, thickening of

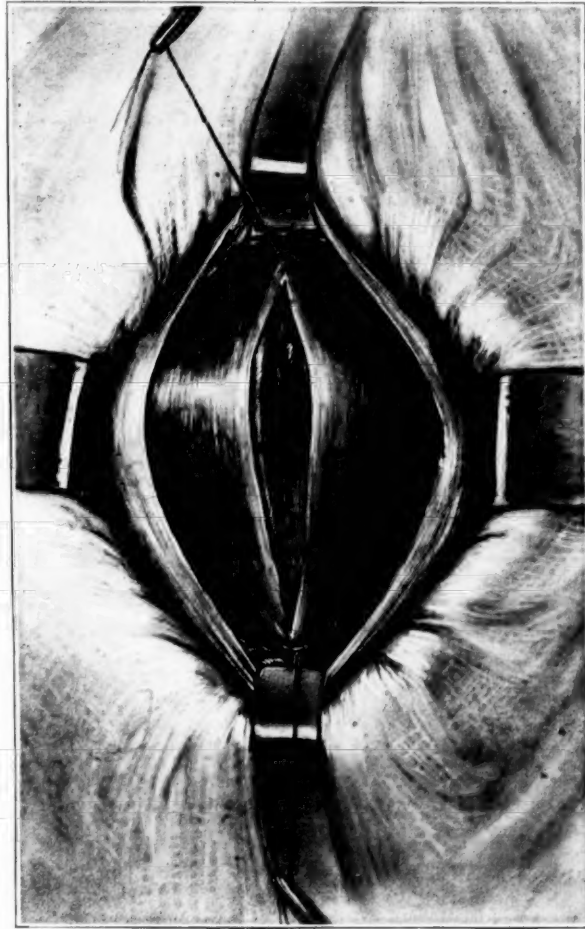


Fig. 3.—Upper and lower peritoneal flaps retracted. Traction sutures inserted in lower and upper angles of site of incision. Incision of uterus between traction sutures.

the bases of both broad ligaments, and tenderness in the uterosacral ligaments. During the third week postpartum, patient developed a phlegmasia alba dolens.

CASE 10.—No. 14518. Multipara. Ambulance case. Not in labor. Membranes intact. Many vaginal examinations by a midwife, later by a physician, through an unclean vulva. Patient potentially infected at time of operation. Temperature reached 99°F. on third day after operation, and continued so until patient left hospital.

CASE 11.—No. 14612. Multipara. Ambulance case. In labor about seventy hours.

Membranes ruptured about fifty hours. Pains severe. Many vaginal examinations through an unprepared field by midwife and physician. Patient potentially infected at time of operation. Temperature normal third day after operation. On night of sixth day temperature 101°F., but it was normal the next morning and remained so until patient left the hospital.

Although seven cases were potentially infected at the time of operation, and six cases showed infection after operation, the uterine wound was so effectually sealed that there was no leak into the general peritoneal cavity and no peritonitis developed. All the mothers lived. Three cases had a distinct pelvic pathology upon dismissal from the hospital.

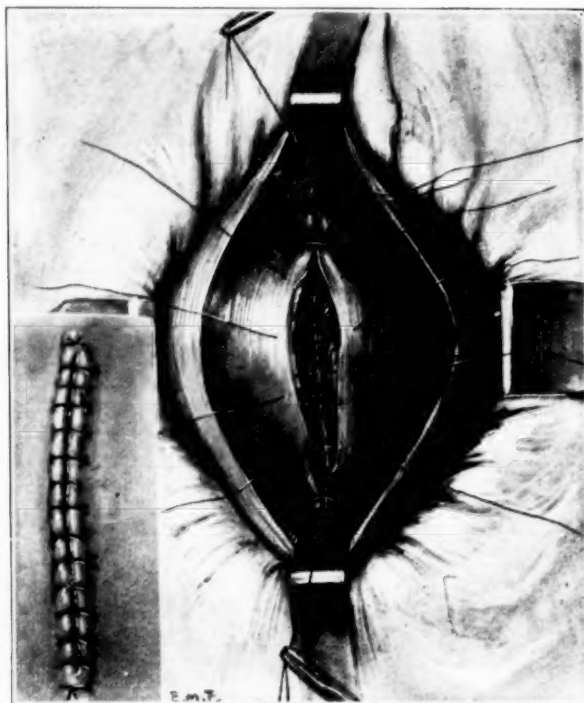


Fig. 4.—Deep layer of interrupted sutures placed. (Placenta and membranes delivered.) Superficial layer of interrupted sutures placed. The placing of these sutures is facilitated by traction made by an assistant. Insert shows uterine wound closed. Sutures tied.

We may sum up these eleven cases as follows:

Duration of labor before operation: not in labor, two; in labor 3 to 10 hours, none; in labor 10 to 24 hours, three; in labor 24 to 36 hours, three; in labor 36 to 48 hours, one; in labor more than 48 hours, two; in labor more than 24 hours, six.

Condition of the membrane: not ruptured, two; ruptured less than 10 hours, two; ruptured 10 to 24 hours, four; ruptured 24 to 36 hours, one; ruptured 36 to 48 hours, two; ruptured more than 48 hours, none; ruptured more than 10 hours, seven.

Vaginal examinations: no vaginal examinations, one; two vaginal ex-

aminations, two; three vaginal examinations, one; many vaginal examinations, seven; two or more vaginal examinations, ten; examinations through an unclean vulva, eight.

Cases which from the duration of the labor, length of time the membranes were ruptured, and the number of vaginal examinations through an unclean vulva were regarded as potentially infected, seven. Of this number those actually infected, as shown by temperature and pulse, six.

Inasmuch as eleven case reports are insufficient from which to draw

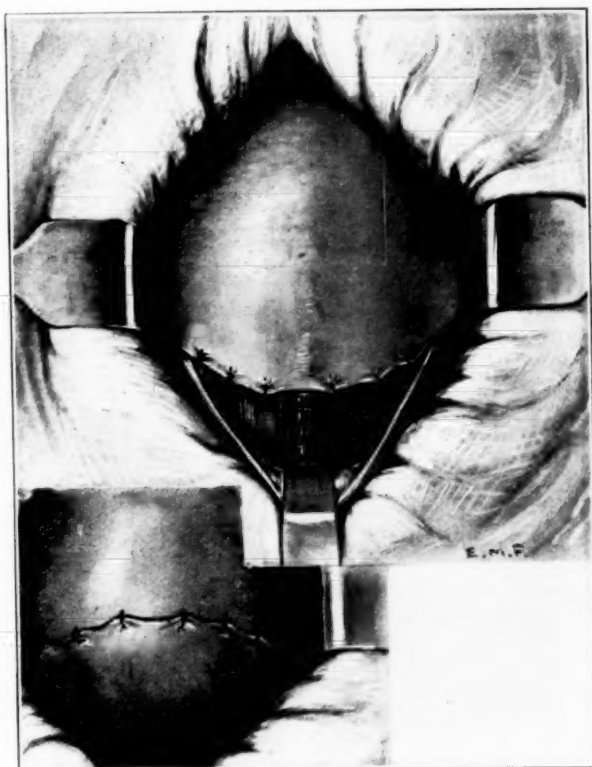


Fig. 5.—Upper picture. The upper or superior flap is anchored by from 4 to 6 interrupted plain catgut sutures. These sutures must not come in contact with the perpendicular uterine wound.

Lower picture. Dotted line shows upper or superior flap anchored. The lower flap of bladder reflection is brought to a point just above the upper angle of the uterine wound and anchored by interrupted plain catgut sutures. A continuous suture may be employed, care being taken not to come in contact with the perpendicular uterine wound. The uterine incision is completely sealed by the peritoneal flaps.

definite conclusions, it is my privilege to add the end results of the cases operated upon by Drs. John Osborn Polak and Alfred C. Beck, from January, 1919, to August 1, 1920, at the Long Island College Hospital. In these nineteen months Polak and Beck performed separately, forty-two double flap low Cesarean sections. Many of these cases were brought to the hospital after having been subjected to much vaginal manipulation by physicians and midwives. In no one instance was the

vulva prepared, neither did the examiner wear sterile gloves. Notwithstanding these facts, in this series of forty-two consecutive cases not a single case of peritonitis developed; and none of the mothers died.

Their chart records, as well as my own, show that the double flaps completely peritonealize the uterine wound. As a result adhesions and postoperative disturbances are greatly minimized. As a result of the findings on this series of a total of 53 cases I have concluded as follows:

1. The double flap and low incision Cesarean section offers great protection against extension of infection to the peritoneum from an infected uterus.
2. For this reason this should be the operation of choice in all potentially infected cases.
3. For the same reason the field for Cesarean section should be extended to such cases as have been long in labor, with the membranes ruptured, and the presence of a potential infection from frequent vaginal manipulation; cases in which most operators would perform a craniotomy on a living child rather than do a Cesarean section.
4. The double flaps so completely peritonealize the uterine wound that adhesions and postoperative disturbances are greatly minimized.
5. Because of the results obtained and the reasons given, the two flap low Cesarean section should be the operation of choice even in elective cases.

842 UNION STREET.

(For discussion, see p. 379.)

VAGINAL CYSTS*

BY L. W. STRONG, M.D., NEW YORK, N. Y.

THE clinical importance of vaginal cysts is not extensive, neither are they of extreme rarity; their interest lies chiefly in their origin, for which there are several possibilities.

Traumatism or operative enclosure may result in a cyst without characteristic features. More interesting are heterotopic vestibular or cervical glands which may give rise to cysts of the lower or upper vagina. Apart from such misplacement of the glands it must be noted that the squamosa of the vagina may, through faulty development be replaced by columnar epithelium and this may give rise to glandular structures which may become cystic. Vaginal cysts from such an origin are apt to be small, multiple, with a low columnar epithelium which may be in true papillae. The most interesting form of cysts, however, is that derived from the Wolffian or Gärtner's duct, and this type may be of considerable size. It is interesting in point of size, in point of complexity of form, and in its predilection site, but apart from these considerations it must be admitted that origin from the Wolffian duct is largely inferential and that there is no determining characteristic.

The wall of a vaginal cyst may contain muscular fibers, but these may be derived from the vaginal musculature and are not peculiar to cysts of Gärtner's duct. The epithelium lining the cyst may be of any type; it frequently happens that the type changes abruptly and even squamous cells may occur in the wall. This indeed is to be regarded as evidence of a heterotopic rather than a mesonephric origin. Vaginal cysts occur rather more frequently on the anterior and lateral walls than on the posterior, which situations give a certain probability to an origin from Gärtner's duct. A review of the course and development of Gärtner's duct is well given by R. Meyer in Lubarsch and Ostertag's "Ergebnissen." Meyer states that the duct normally regresses medially from the epoophoron in the second half of intrauterine life but in embryos of the first month it is demonstrable as uninterrupted. Smaller or larger remnants are found in the newborn, and in 25 per cent of all young children, and they are also not rare in adults. These remnants may give rise to cysts, often with thick walls, most commonly near the uterus. In the adult the epithelium may be strongly papillary and consequently adenomatous growths in the parametrium are to be referred to Gärtner's duct. In the uterus the canal is generally found from the internal os downward, seldom above this. From here on remnants occur down to the hymen.

*Read at a meeting of the New York Obstetrical Society, October 12, 1920.

The most important part of Gärtner's duct is the cervical and Meyer regards this as the analogue of the ampulla vasis deferentis, therefore he terms it the ampulla of Gärtner's duct. The ampulla appears in the second fetal month and reaches its highest development in the eighth month. The epithelium is one-layered and highest in the main canal, lowest in the branches. This is an instance of the fact that persisting remnants do not necessarily remain in the stage of differentiation which has been reached, but may develop even further. On this account they have no tendency to tumor formation. Remnants of the duct in the vagina, inclusive of the hymen, were found by Meyer in 94 per cent of feti of two and three months, and in 33 per cent of the newborn. In this situation the epithelium has the greatest individual variations. One-layered, many-layered, high cylindrical or flat epithelium, and numerous transition forms appear in one and the same canal, often abruptly changing from one into the other.

There are three predilection sites in the female; namely, the epophoron, the ampulla and the lowest portion of the vagina inclusive of hymen. Abnormalities in form and course of the duct occur. The epithelium is so variable and individual that one can hardly speak of true abnormalities, and squamous epithelium has even been found in adults. Cysts are the commonest variations from the persisting duct and occur in various sites. Finally adenocarcinoma and adenomyoma may be formed from rests. Thumim described a very characteristic adenoma from dendritic branched canals, so that two forms could be distinguished—namely the main canal and its side branches. Landau and Pick described mesonephritic adenomyomata which Meyer and Fränkel regarded as arising from Gärtner's duct. Carcinoma can develop from adenoma, or a diagnosis of carcinoma might be made from branched Gärtner's duct with many layered epithelium. We see how near normal and abnormal persistence lie to each other, but in fact tumors of the duct are very rare; at the most they are usually cystic.

Two cases seen recently illustrate these two types of vaginal cysts, the large, probably Wolffian and the small probably due to heterotopia of the vaginal squamosa. The first case, Mrs. F., from the service of Dr. G. G. Ward, was sent to the Woman's Hospital with a diagnosis of cystocele. Upon examination a thin-walled cyst, the size of an orange, was found in the lower anterior vaginal wall. This was easily removed and the patient made an uninterrupted recovery. The cyst, received open, had a diameter of approximately 8 cm. The inner surface was smooth, the outer was roughened by hemorrhage. Several sections showed a dense connective tissue without signs of epithelium, others showed a single-layered, high columnar, nonciliated epithelium thrown into marked papillations. The connective tissue beneath the epithelium formed narrow strands which separated distinct bundles of smooth muscle fibers which were very conspicuous. (Fig. 1.) The second case, of which

I have no data except a slide sent for microscopic examination, was a cyst of the anterior vaginal wall just lateral to the cervix. The microscopic examination shows a squamosa interrupted abruptly by a columnar epithelium, in places showing definite papillations. There are occasional glands with simple tubular outline, beneath the surface. The wall consists of a musculature and connective tissue without any characteristic

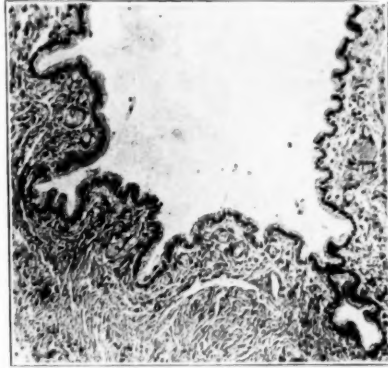


Fig. 1.—Section from large vaginal cyst probably of Wolffian origin.

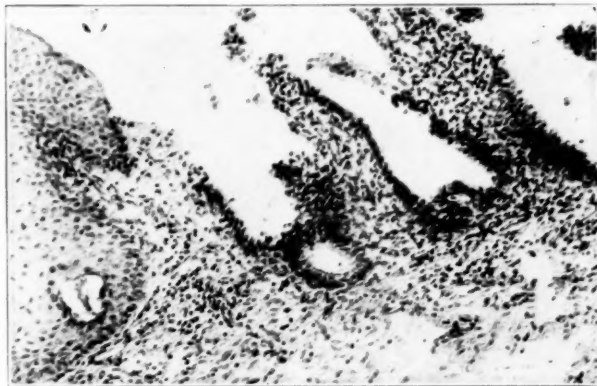


Fig. 2.—Section from cyst of anterior vaginal wall, suggestive of ampulla of Gartner's duct.

arrangement. (Fig. 2.) Without knowing more as to the size of the cyst, it is impossible to state its origin, though its location strongly suggests the ampulla of Gartner's duct. The other possibility, that of heterotopia of the squamosa is suggested by the fact that there are alterations of two forms of epithelium. Misplaced cervical glands are less likely, because the epithelium is not the high columnar cervical type, and, as the photograph shows, the villi are not similar to the wavy outline of the collum cervicis.

141 WEST 109TH STREET.

(For discussion, see p. 385.)

AN ANALYSIS OF FIFTY CASES OF ECTOPIC GESTATION*

By HERMANN GRAD, M.D., F.A.C.S., NEW YORK, N. Y.

IN a series of fifty cases of ectopic gestation operated on at the Woman's Hospital of New York and elsewhere, certain facts have forced themselves to my attention. These have served as a basis for clinical action and renewed efforts for holding out a helping hand to unfortunate victims of this accident. The facts observed have crystalized themselves in my mind to this end, that ectopic gestation cases clinically divide themselves into four definite groups, according to the degree of the hemorrhage sustained by the patient. These groups are as follows:

1. Ectopic gestation with negligible hemorrhage.
2. Ectopic gestation with moderate hemorrhage.
3. Ectopic gestation with severe hemorrhage.
4. Ectopic gestation with fatal hemorrhage.

In the 50 cases herewith presented, 37 were of the first group, namely, negligible hemorrhage; 4 in the second group, with moderate hemorrhage; 7 in the third group with severe hemorrhage, and 2 were fatal cases from hemorrhage. The analysis of the cases shows that 74 per cent of ectopic gestation have a negligible amount of bleeding; 8 per cent have a moderate amount of bleeding; 14 per cent have severe hemorrhage, and 4 per cent have fatal hemorrhage.

In the first group with 37 cases the most prominent symptom present was pain in 26 cases and uterine bleeding in 11 cases.

I have prepared three tables tabulating the various features of the 50 cases of ectopic gestation. In every one of these cases the pathologist confirmed the diagnosis.

TABLE I
DIAGNOSIS*

GROUP	DISEASED ADNEXA	ECTOPIC	FIBROID	APPENDICITIS	RETRO- VERSION	TOTAL	PER CENT
1	23	10	2	1	1	37	25
2	0	2	2	0	0	4	50
3	0	7	0	0	0	7	100
4	0	2	0	0	0	2	100
						50	

*Ectopic diagnosed incorrectly in 42 per cent of all cases.

Table I deals with the diagnosis. In the first group only 25 per cent were correctly diagnosed; in the second group 50 per cent were diagnosed. In one case of the group a diagnosis of acute appendicitis was

*Read at a Meeting of the Obstetric Section of the Academy of Medicine, New York, N. Y., October 26, 1920.

made. As I sat at the bedside of this patient the possibility of an ectopic gestation on the right side was duly considered, but was dismissed from my mind. After due deliberation I was so certain of the diagnosis of acute appendicitis that the next day a McBurney incision was made for the removal of the appendix. When the abdomen was opened a ruptured ectopic was encountered with free blood in the peritoneal cavity. The blood was fresh arterial blood and the rupture of the gravid tube must have occurred during the preparation of the patient for the operation. With the patient anesthetized and the protective rigidity of the abdominal muscles removed, the patient is unable to protect herself. It is easily conceived how manipulation of pelvic organs can cause a rupture and consequent bleeding into the peritoneal cavity. Twice I have encountered this condition of fresh arterial blood in the peritoneal cavity from the rupture of the gravid tube during the scrubbing of the patient preliminary to the operation. In both cases the diagnosis of acute appendicitis was made. In the case cited above, where the McBurney incision was made it was impossible to reach the ruptured tube through the incision. Access to the uterine adnexum was, however, obtained by incising the posterior sheath of the rectus muscle.

TABLE II
SYMPTOMS

GROUP	PAIN	BLEEDING	COLLAPSE	SYNCOPE	TOTAL
1	26	11	0	0	37
2	3	1	0	0	4
3	0	0	7	0	7
4	0	0	0	2	2
Totals	29 58%	12 24%	7 14%	2 4%	50

Table II deals with symptoms. It shows that in the first group pain was the prominent symptom in 26 cases, vaginal bleeding in 11. In the second group pain was a prominent symptom in three and bleeding in one. In the third group the prominent symptom was collapse and in the fourth group syncope. It would seem that there is very little difference between a case with collapse and one with syncope, but actually there is a great difference. In collapse the patient has a thready pulse but her mind is clear. She realizes her condition but her mind is alert and she is conscious of everything. In a case of syncope, the mind is dulled, the patient is not conscious of what goes on about her and the pulse is lost, or at best shows only an occasional beat. I feel that I can hold out hope for a ruptured ectopic case in collapse, but have no hope for one in syncope.

Table III shows the various operations that were performed on 48 cases. In the first group in 16 cases the ectopic was on the right side, in 20 on the left side, and once in the right horn of the uterus. There were 86 operations done. In the second group the gestation was in the right

TABLE III
OPERATION

GROUP	SALPINGECTOMY		HORN	D & C	MYO- MECTOMY	PLASTIC	APPEN- DECTOMY	OVARY	TOTAL
	Right	Left							
1	16	20	Right	17	1	3	16	12	86
2	1	3	0	1	0	0	1	1	7
			Left						
3	5	1	1	0	0		0	2	9
4	22	24	2	18	1	3	17	15	102
	44%	48%							

side in one case, and three times on the left. In 48 cases the right tube was involved twenty-two times and the left tube twenty-four times, showing that the gestation occurs with the same frequency in both Fallopian tubes. In two cases the pregnancy was interstitial, once on the right and once on the left side.

Cases in the first group frequently escape diagnosis. The patients are not very sick and I have no doubt many of them recover spontaneously without any incident. If the diagnosis is established, it is done so on physical findings. Operation in these cases should be performed, because the patient may suffer a severe hemorrhage from a repeated rupture of the tube. Operation can be deferred until the peritoneal irritation subsides and recovery takes place from the attack of pain. Operations under these conditions have no mortality and very little morbidity.

There should be no difficulty in diagnosing the second group of cases. The hemorrhage is of a moderate degree as is also the shock; the pulse is good, the pain quite severe, and yet only 50 per cent are diagnosed correctly. Local examination is not always necessary to establish the diagnosis and should, if possible, be avoided. In the four cases under this group, three had pain and one bleeding from uterus. In these cases also operation should be deferred until the patient recovers from the shock and of the hemorrhage. The operation, however, should not be delayed long on account of the danger of repeated hemorrhage. In this class of cases the operation in the interval gives practically no mortality and very little morbidity. The patient should be in the hospital in bed and under suspension of all activity.

The problem is different with the third group. These are cases where the hemorrhage has been very severe, the shock very marked and collapse is imminent. These cases require immediate treatment before they are even transported to the hospital. Local manipulation of every kind should be avoided. All efforts should be directed towards supporting the vital function of the patient until the bleeding can be controlled by operative measures. The pain should be relieved by morphine, the head lowered, the extremities bandaged. As soon as arrangements can be made the case should be sent to the hospital for operation. A donor should be at hand for a blood transfusion which is started before the

abdominal incision is made. The transfusion of blood is continued during operation and ended after the abdomen is closed.

Gentle manipulation during the preparation for operation is very essential. The vagina should not be washed. Vaginal examination should be avoided. While the patient is being prepared for operation and while the necessary blood tests are being made of the donor a hypodermoclysis of salt solution may be given under the breast.

When the donor is ready and everything is prepared for the operation, the patient is sent to the operating room, but the anesthesia should not be started until about 200 c.c. of blood have been transfused. These exsanguinated cases are very readily anesthetized, a few whiffs of gas cause enough anesthesia to allow the abdominal incision to be made and to tie off the tube so as to control further bleeding. The operation should be of short duration. The damaged tube should be excised by a technic that can be executed with expedition and safety. It is not necessary to clean up the peritoneal cavity, only those clots that can be readily removed need be sponged out. Fluid blood is removed merely to allow the operator to see the operative field. If the case proves to be an interstitial pregnancy with a ragged uterine horn, the tissues in the ragged hole are rapidly cleared away, all products of the gestation removed, if necessary, fragments of tissue are trimmed with scissors, and the aperture in the horn of the uterus closed with interrupted sutures, care being taken to suture firmly enough to insure against further bleeding. The suture line in the horn of the uterus should be peritonealized if this can be accomplished without prolonging the operation too much. This method of closure of the ragged hole in the horn of the uterus, no matter how great the damage may be in the organ, is preferable to a hysterectomy, as the recovery is much smoother. In two cases of this series, hysterectomy was performed. In both the convalescence was very stormy, and they were on the verge of death for several days. Pathologic tissue should be removed as expeditiously as possible. If the opposite tube of the ruptured side is diseased it should be removed but no extensive dissection of tissue should be undertaken. A pus tube on the opposite side is often encountered. A rapid salpingectomy can always be done without any danger to the patient. The abdomen is closed as quickly as possible and the patient returned to her bed for further treatment.

Can anything be done for the fourth group of cases with our modern methods and better equipment? I believe today we can rescue some of these possibly fatal cases by well-directed and concerted action. How shall we go about it? These fatal cases of ruptured ectopic when found in a state of syncope bear very poorly transportation to the nearest hospital. If these cases are to be saved, something must be done for them at their homes. It is therefore essential that hospitals provide the necessary things needed to rescue life.

Called to a case of ruptured ectopic with syncope our first thought

must be to restore the circulation to a degree compatible with life. Experience has shown that normal saline solution given intravenously is not sufficient to maintain life because the solution does not remain in the circulation. Modern investigations have shown that by adding gum arabic to a saline solution the fluid will remain in the blood vessels for a longer time than a solution without gum. If this is true it will offer a life-saving measure in these serious cases of ectopic gestation. At the Woman's Hospital we have been using a gum glucose solution with very good results. I have had no experience with this gum glucose solution in what I consider fatal cases of ruptured ectopic gestation, but if gum glucose will stay in the blood vessels for a sufficient time, until a donor can be obtained for a blood transfusion then I feel that it will prove a life-saving measure. It is worthy of trial.

Should I come in contact with a case of ruptured ectopic with symptoms of syncope added to that of collapse and shock, I would suggest the following procedure. As these cases bear a transportation poorly, usually dying 15 or 20 minutes after they reach the hospital, they should be infused with gum glucose or saline and gum solution before transportation. While this is being done a donor should be obtained for a blood transfusion. While the preparation is being made for the gum infusion the patient must be relieved of pain with morphine, the extremities should be bandaged, the foot of the bed elevated, and external heat applied to diminish radiation. Cardiac stimulants should not be used, as a possible displacement of a clot formed in the bleeding vessels is to be discouraged.

With the donor at hand and the pulse restored even partially with the gum solution, the patient may now bear transfer to the operating room, where the blood transfusion may be given at once. After several hundred c.c. of blood have been given, the anesthesia is started. Deep narcosis is to be avoided. The operation should be done as rapidly as possible and should have for its aim the control of the bleeding and nothing else. It is not necessary to prolong the operation in order to remove fluid blood and clots. The blood transfusion is continued during the operation and ended with the closure of the abdomen. A large quantity of transfused blood is not essential, from 500 to 600 c.c. is sufficient. In this manner I believe some of these fatal cases may be rescued from death, at any rate it is worth trying.

In the two fatal cases that came under my observation the histories were as follows:

Mrs. E., age thirty had missed one menstrual period, and began to spot a few days before the time of her second period. She considered herself pregnant. She had one child 2 years previously. About 10 A.M. the patient experienced abdominal pain, went to the bathroom, and fainted. She was put to bed and felt better. At 11:30 she had a severe attack of abdominal pain and sent for her doctor. He arrived at 3 P.M. and found the patient in collapse. I saw the patient about 4 P.M. and she was admitted to the hospital about 4:30 where she died about 40 minutes after

admission when an intravenous transfusion was begun. The patient died about seven hours after the initial onset of the pain. How long she was in the state of collapse and how long the state of syncope lasted is not definitely known, but so far as could be learned the patient went into collapse about 2 P.M.

In the second fatal case the history was somewhat different. This patient was a young woman nineteen years old, married eight months. She had missed two periods and had her bleeding and spotting for six weeks. She consulted a physician who was to have curetted her for retained secundines. The day previous to the expected operation for curettage the patient was seized with a very sharp attack of pain, and also fainted in the bathroom. This occurred about 9 A.M. Her physician did not see her until 4 P.M. when he found her in collapse. I saw the patient about 6:45 in complete collapse with attacks of syncope following each other in rapid succession. She arrived at the hospital at 7:30 P.M. The donor was at hand at 8:10. The patient received about 300 c.c. of blood when she expired. No operation could be performed.

40 EAST FORTY-FIRST STREET.

(*For discussion, see p. 394.*)

Erratum

Issue of December, 1920. Article of Dr. R. T. LaVake on Toxic Vomiting of Early Pregnancy, page 289. Employment of corpus luteum extract inadvertently attributed to Dr. B. C. Hirst should read Dr. J. C. Hirst.

Case Reports

HERNIA OF THE ILEUM THROUGH A RENT IN THE MESENTERY*

BY WM. EDGAR DARNALL, M.D., F.A.C.S., ATLANTIC CITY, N. J.

THE occurrence of the hernia described below is very unusual. I can recall but one case reported in medical literature similar to this one. The author's name I have forgotten. F. A. Roscher, Christiana, Norway, however, reported a case of "*Reposition en bloc* with Ileus," in 1919, in which there was a condition somewhat akin to that in my patient.

Mrs. D. Age, forty-six, married, weight 200 lbs., one child. She has never been seriously ill; family history negative. She was the picture of health. Has had no symptoms until recently when she noticed a "lump" in the abdomen and suffered from menorrhagia.

Examination revealed a fibroid tumor of considerable size, freely movable and uncomplicated; there was also a very slight laceration of the cervix. On July 12, 1918, I performed a supravaginal hysterectomy. From this operation she made a most perfect recovery.

On August 12th, a month afterwards, she ate a large dinner. About six o'clock the next morning she was seized with vomiting and a most agonizing pain in the epigastrium. The pain was so severe that morphine had to be administered. Irrigation of the bowel produced a copious stool. The next day her pains were considerably improved but distention appeared. During the afternoon there was an absence of peristaltic sounds on auscultation, the pulse was increased in rapidity, and the temperature had risen to 101° F. Dr. Hobart A. Hare, of Philadelphia, saw the patient with me in consultation and was of the opinion that, in spite of the temperature, there was some form of obstruction, although enemata still brought away some feces and gas. Operation was decided upon and performed at 5 P. M. The findings were as follows: Through an opening in the mesentery of the second convolution of the ileum there had slipped a loop of the ileum belonging to the first convolution high up on the left side under the spleen. There was a volvulus of this loop, and it was gangrenous and perforated. There was an abscess in the left kidney pouch and foci of pus at various locations in the upper abdomen. The whole abdominal cavity was filled with fluid and intestinal contents.

The hernia was released and the rent in the mesentery closed. Twelve inches of ileum were resected and a Murphy button used for anastomosis. Drainage and counterdrainage were used. Proctoclysis with Locke-Ringer solution was instituted and the Fowler position ordered.

An opportunity was afforded of inspecting the lower abdomen and pelvis which were found in perfect condition with no adhesions or constricting bands anywhere. Indeed it was rather exceptional to find everything so smooth and free from adhesions just one month after the first operation.

*Read at the Thirty-third Annual Meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons held at Atlantic City, N. J., September 20-22, 1920.

I am unable to account for the rent in the mesentery so far from the site of the pelvic operation, which made this unusual hernia possible. The patient had led a very quiet and well-ordered life since her first operation and was apparently in perfect health. Death occurred from shock about five hours after the operation.

1704 PACIFIC AVENUE.

(For discussion, see p. 381.)

AN UNUSUAL ABDOMINAL CYST*

By O. G. PFAFF, M.D., INDIANAPOLIS, IND.

THIS case is reported on account of its rarity and the puzzling diagnostic elements which it presents; consequently attention is directed almost solely to certain mechanical features which are here briefly described.

On March 20, 1920, I was consulted by a young married woman on account of a large abdominal cyst which had been tapped ten days previously; twelve quarts of thin fluid having been drawn off at that time, according to the statements of the patient and her husband. Her history had been one of good health. The first menstruation occurred at the age of fourteen and this function had always been normal. She had passed through three normal pregnancies, the last of which occurred three years ago, and was followed by phlebitis affecting both legs. This had, however, practically disappeared when I first saw her.

She noticed some abdominal swelling about four months before she came to me. This had not given her very much trouble until about six weeks before she consulted me, when she began to suffer severely from pressure symptoms. Her appetite was impaired and she had lost a few pounds in weight.

The abdomen was greatly distended, and fluctuation was readily elicited in every part. Dullness on percussion was general with the exception of a slight indistinct resonance in the epigastrium.

The case was considered one of large ovarian cyst. She came into the hospital, March 22, and I operated the following day.

Through the usual median incision I came directly upon the sac, which was so densely adherent to the parietal peritoneum that it required some care to develop a line of cleavage; the further separation, however, being accomplished with only moderate difficulty and I was then able to pass my hand freely in every direction, widely on either side and almost from the diaphragm to the pelvic brim. Retracting the lower angle of the abdominal incision the bladder came into view; it was normal in appearance and free from adhesions. Its wholesome color contrasted strongly with the dark, purplish red hue of the cyst wall, which was firmly adherent across the brim of the pelvis in front of the uterus and on a line corresponding to the vesicouterine fold. Upon separating the sac along this line a gush of several quarts of water occurred. I continued the separation and lifted up a flap of the material seemingly constituting the anterior wall of the cyst, but which was now recognized as a perverted and greatly thickened omentum. With the lower omental flap held up, I came upon a number of peritoneal cysts varying in size from that of a walnut to a large grape fruit. The whole pelvis was filled with this mass. The intestines were held down and away from the anterior abdominal wall by innumerable strands of adhesions so that, even when distended by gas, there would be no note of tympany elicited on percussion. This was one of the puzzling elements in diagnosis. The laboratory report on the specimen removed for examination stated that the condition was a proliferating tuberculosis with much newly formed fibrous tissue.

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Merry describes certain rare forms of tuberculous peritonitis which manifest themselves as large tumors which, on account of their abnormal situation, present very confusing features leading to a variety of diagnostic errors. He reports a number of cases. Numerous cases are also recorded of tuberculous cysts which present clinical pictures and physical resemblances to pyosalpinx.

The only report which I have¹ been able to find of a case somewhat similar to the one I have related was by A. J. Nyulasy in the *Australasian Gazette*. The patient was a healthy looking girl of seventeen years, with a greatly enlarged abdomen and long standing pain in the iliac fossa. Examination showed dullness extending upwards towards the umbilicus in the midline and to the right of it; but higher on the left side, the dull area being rather indefinitely fluctuant. When the abdomen was opened, the omentum was found adherent to the abdominal wall, greatly thickened and caused the anterior wall to resemble a fluctuating cyst. Along with the thickened peritoneum was a layer of fibrinous material which largely formed the front and sides of the cyst wall and spreading below completely hid from view the uterus and appendages. Posteriorly the cyst wall was formed by the intestines.

The case which I report is unique in my experience. The great thickening of the omentum, the extensive fibrinous formation, the restrained viscera, all were unusual; and the resultant absence of tympany regardless of posture constituted a complex which was very puzzling, indeed, and very misleading in diagnosis.

2222 NORTH PENNSYLVANIA STREET.

1. ENCEPHALITIS COMPLICATING PREGNANCY NEAR TERM. 2. MALIGNANT DISEASE OF THE CERVIX IN A YOUNG PRIMIPARA*

BY WILLIAM M. BROWN, M.D., F.A.C.S., ROCHESTER, N. Y.

CASE 1.—Encephalitis complicating pregnancy near term presents unusual difficulties of diagnosis. Mrs. V. S., American born, white, aged thirty-one, married six years and pregnant for the first time. Family history negative. She had had no serious illness, except the ordinary diseases of childhood. For several years she was subject to irregular and severe headaches. Menstrual life began at thirteen and was always regular and normal. The last period occurred July 24, 1919. The date of quickening was not noted, but labor was anticipated about April 30, 1920. There was very little vomiting during the early months of gestation, but on September 30 she had a very severe headache, both frontal and occipital. This headache recurred at irregular intervals during her pregnancy. In February, 1920, her eyes and nose were examined and reported normal. Bowels moved freely at all times. There was no edema. Frequent urine examinations showed normal renal function. The following month she called on her physician complaining of headache and a blurred vision; the systolic blood pressure was 126. She was sent to a hospital and placed on pre-eclamptic treatment, low protein and salt-free diet, and sulphate of magnesia to full catharsis. When admitted to the hospital, her temperature was 97°F., pulse 110, respiration 22, and blood pressure 118/77. On March 30, she still complained of dim vision and the ophthalmologic report was as follows: Pupillary reactions normal; tension of both eyes normal; counts fingers with either eye at four feet; there is a moderate retinitis. White areas not fully developed, and some exudate

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around the disk; vessels are hyperemic. The oculist's comment was "I doubt if patient can go to full term without permanently impairing her vision."

For the substance of the above history I am indebted to Dr. L. L. Button who asked me to see the case with him on the afternoon of March 30. During the two previous days her temperature fluctuated between 98.6° and 100° F. The blood pressure was 118/80.

After a careful examination of the patient and history, I was not convinced that it was an uncomplicated case of toxemia of pregnancy and advised further observation; but the other physicians and the relatives were so fearful of eclampsia and so convinced that her illness was due alone to her pregnant condition that I was persuaded to undertake immediate delivery because I could offer no satisfactory objection.

Abdominal delivery was elected as being the safest procedure for both mother and child. The operative record shows a preoperative diagnosis of "toxemia of pregnancy," with a reservation. A classical Cesarean section was performed through the supraumbilical incision. After delivery of the uterine contents and repair of the uterine wound, seven small-sized subserous fibroids were removed from the fundus. Before beginning the operation, a stomach tube was passed to relieve an extreme gastric dilatation.

The patient reacted well from the operation, but twenty-four hours later her temperature was 101° F., and thirty-six hours thereafter it had risen to 103° F. It then gradually receded until on the seventh day postpartum it touched normal; but immediately rose again to 103° F. where it remained most of the time for about five days, when it became normal again and remained so for three days. During her entire illness a most embarrassing and obstinate abdominal distention was present. On April 11 a few crepitant râles were heard at the base of the right lung and on the fifteenth there was dullness and a small area of bronchial breathing. At this time I retired from the case and her own physician resumed her care.

On April 25, I was again called to see this patient. She had steadily improved and had been up in a wheel chair the day before. But on that very evening she had a severe convulsion of five minutes' duration. Her blood pressure was 130/80.

Patient complained of severe pain and tenderness in the left upper abdomen and back. There was marked rigidity of muscles of left side of the abdomen. April 27, there was increased stupor, marked Babinski sign in the left foot, and the left leg was flexed constantly. April 28, two convulsions. April 29, considerable pulmonary edema. Babinski sign present in both feet; pupils normal and react to light equally; can swallow well. April 28, a spinal tap was made. Pressure 60 mm. Globulin positive, two cells per mm. Bacteria none. A cystoscopy and ureteral catheterization showed normal condition of bladder and ureters. During this time the temperature ranged between 102° and 103°; the pulse between 120 and 130, and the respiration between 30 and 40. The blood contained 83 per cent polynuclear cells, and the gross white count ranged from 7840 to 16896. The blood urea nitrogen always remained about ten mgm. per 100 c.c.

April 27, a rapid abdominal exploration was made to decide the question of peritonitis. No pathology was found. Considerable rigidity of the neck was noticed at this time. The ophthalmologist again examined the eyes, under a mydriatic, and stated positively that the coma was not due to brain pressure. April 28, I was present during one of the convulsions and noticed that the seizure began in the index and middle fingers of the left hand and then gradually involved all other muscles of the body. I now abandoned every other diagnosis except encephalitis and gave a fatal prognosis. She died the following day. The post-mortem findings were as follows: Body length 65 inches; well developed and nourished. Rigor mortis in extremities. Surgical incision of abdomen undergoing normal healing. Pleural cavity; small filiform adhesions present in both sides.

A small amount of fluid in both cavities. Pericardial cavity, about 60 c.c. of clear fluid except over the sac. Visceral surfaces smooth and normal. Abdominal cavity, peritoneal surfaces smooth and normal, except over the fundus of the uterus a few adhesions bind the healing uterus to the wall of the intestine. Lungs crepitant throughout, except in the right lower lobe where there was a partly consolidated condition. Section shows pneumonic areas. Heart and vessels; heart weighs 250 grams. Valves and myocardium normal. Aorta normal. Liver, weight, approximately 1200 grams. Liver tissue is slightly pale in color but otherwise normal. Gall bladder, normal. Pancreas; weight, 75 grams. Normal. Spleen; weight, 90 grams. Pulp cream-red in color. Kidneys; combined weight 250 grams. Cortex and medulla easily distinguished from one another. The parenchyma congested and blue-red in color. The capsules strip normally. Subcapsular cortical tissue injected. Stomach and intestines hyperemic, but in other respects normal. Uterus; endometrium smooth and of a pink-red color. The wall of the fundus partly (about half) repaired; the peritoneal surface below normal. Head; scalp covered with serum, due to a wet and boggy skin. The surface of the calvarium is wet and slippery (serous). Beneath the dura mater a thick purulent exudate covered the superior surfaces of the right and left hemispheres. Section into the brain substance showed the lateral ventricles contain a small quantity of slightly reddened fluid. The cortical and subcortical brain tissue presented petechial hemorrhages. In the right cerebral hemisphere was an area 2x3 inches in diameter composed of blood clot bordered by softened brain tissue. The hemorrhage did not communicate with the ventricles of the brain. The meninges of the base of the brain were not involved. Bacteriologic examination; diplococcus and pneumococcus from cerebral hemisphere. Anatomic diagnosis: Encephalitis. Brain hemorrhage. Basal lobar pneumonia. Parenchymatous nephritis. Postoperative healing wounds of uterus and abdominal wall.

CASE 2.—Malignant disease of the cervix in a young primipara. This case is presented because of its extreme rarity, and its history should be preserved in the records of this association.

Mrs. H. G., aged twenty-four years, American, white. Father died at forty-seven of heart trouble; mother died at forty-one of cancer of the stomach. Otherwise hereditary history negative. Before puberty patient had scarlet fever, mumps, measles, whooping cough, and chicken pox. At eighteen she suffered an attack of appendicitis, but was not operated upon. Menstruation began in the twelfth year and was always regular, the flow being moderate and without pain. About a year ago she missed one period, believed herself pregnant, and thought she miscarried. No cause was known for the menstrual omission or the abortion, if it was one. There was no instrumentation of any kind. With the exception of June, 1919, she menstruated regularly throughout her pregnancy, each period lasting about four days. She was admitted to the hospital service on January 14, 1920, with a message from her physician that she had placenta previa.

Examination showed the patient to be organically and physiologically normal, except for a foul, grumous, red, vaginal discharge. Pregnant and near term. Vertex presented. Rectal examination revealed a soft spongy mass in the region of the cervix. January 16, after careful preparation, and under gas anesthesia, an ocular examination of the vagina was made and a soft sloughing mass was observed which involved the right side of the cervix and the upper portion of the vagina. The cervix was quite movable and not dilated. A small section of the mass was removed with the sponge forceps, which the pathologist pronounced "highly malignant, rapidly advancing squamous-celled carcinoma."

The membranes ruptured and labor began the morning of January 20. She was immediately taken to the operating room, and a transperitoneal Cesarean section was performed through a low and long incision. A healthy child was delivered. The

uterus was quickly closed with temporary sutures. This was immediately followed by a panhysterectomy, removing the upper half of the vagina at the same time. There was a minimum of hemorrhage. No shock followed the procedure. The operation was completed in a little less than thirty minutes. Recovery was prompt and uneventful. A vaginal examination, made on February 4, showed a few small nodules in the vault of the amputated vagina. A more radical operation was suggested, but was declined for the time. She left the hospital February 5, promising to return in a week. This she did not do; but instead she returned April 6, when I found the whole upper part of the vagina involved by the bleeding malignant mass. She was not seen again. Her death was announced August 21. The youth of this patient, and the extreme rapidity with which the malignant growth spread in a patient who had never had an injury to the parts involved, make this case one of great interest.

1776 EAST AVENUE.

RUPTURE OF THE BLADDER DURING LABOR*

BY JOHN WILSON POUCHER, M.D., POUGHKEEPSIE, N. Y.

BECAUSE the attending physician could not be located, I was called, about 8 P. M., to the maternity ward of the hospital to see Mrs. W., a primipara, twenty-four years of age. The patient had been in labor about six hours. Her nurse, an experienced one, informed me, that the labor pains had been almost constant for the past hour, and had remained so until a few minutes before my arrival, when, after a very severe paroxysm, they had stopped suddenly. Almost immediately after the cessation of labor pains, the nurse noticed that the patient's respiration had become labored, the pulse had become rapid and weak, and that there was every indication of impending collapse.

The following was the condition on my arrival: Thin, rapid pulse; labored breathing; general exhaustion; anxious expression of the face; body and extremities covered with cold perspiration. An examination showed the fetal head low down, almost upon the perineum.

As there had been no labor pains for the last half hour or more, and taking into consideration the marked condition of shock, a diagnosis of ruptured uterus was made, and as the patient was beginning to respond to stimulants, which had been administered, I decided to deliver at once. This was easily accomplished with the forceps under light chloroform anesthesia; and, rather to my surprise, the uterus contracted normally, and expelled the placenta promptly.

The mother rallied rapidly after labor was completed, and I left her feeling very comfortable; indeed, she passed a very comfortable night. The next morning she began to complain of some discomfort, and her nurse discovered that there was considerable abdominal distention. Upon palpating the abdomen, I found that the distention was caused by fluid, and was too extensive to be caused by a full bladder alone.

As the patient had not voided urine since her delivery, and had experienced no desire to do so, the bladder was catheterized, with the result that a large quantity, about four pints, of slightly bloody urine was withdrawn and, at the same time, the abdominal distention disappeared almost entirely.

The patient was at once prepared for operation, and taken to the operating room. A median laparotomy disclosed a transverse laceration of the bladder, about two and one half inches long, extending across the fundus of the organ. The tear was care-

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fully closed with two chromic cat gut sutures. The abdominal and pelvic cavities were then gently sponged dry of a considerable quantity of urine, and the abdomen closed, with a drainage tube left *in situ*. This was removed the third day. The bladder was drained for the first 24 hours by a retention catheter; but as this was a source of discomfort, it was removed and the bladder was catheterized every two hours for the next two days.

Patient showed not the slightest ill effects from her operation, and was discharged well on the twentieth day after labor.

I find that rupture of the bladder under such conditions is very rare, and that it usually occurs after long, protracted labors, or that it is the result of injury due to instrumental delivery. It is then usually discovered later in the form of uterovesical or vesicovaginal fistula.

The accident could not have occurred in this case had there not been a distended bladder. Although the patient was said to have voided urine frequently during her labor, she evidently had not emptied her bladder. As the head descended and the bladder became more and more distended it was crowded up above the pubes.

It is self-evident that the operation for a ruptured bladder should be done at the earliest possible moment. In this case, about twelve hours had elapsed with no bad results. The peritoneum appears to have suffered no harm from the large quantity of normal, sterile urine. There was practically no hemorrhage, although the tear in the bladder wall was quite extensive.

Because of the possibility of infection, I did not disturb a very small, harmless, but normal looking appendix, although it was very much in evidence.

A little more than a year afterward, I had occasion to operate on this patient for a large gangrenous appendix, with extensive adhesions. I mention this because I believe that this condition of the appendix is likely to occur after such a disturbance in the peritoneal cavity. I have observed this once after a gunshot wound of the abdomen, where several loops of intestine had been perforated, and where there was considerable hemorrhage from injury to mesenteric vessels. On two other occasions I observed this condition while operating for ruptured ectopic gestation.

339 MILL STREET.

1. ACCIDENTAL HEMORRHAGE. CESAREAN SECTION.

2. HEMATURIA IN PREGNANCY*

BY JAMES K. QUIGLEY, M.D., ROCHESTER, N. Y.

CASE 1.—Accidental hemorrhage. Cesarean section. Mrs. E. J., aged thirty-three, para VI, native of New York State. Hospital No. 5429.

Personal History.—In infancy and childhood she had measles, mumps, chicken pox and acute catarrhal jaundice. In adult life she had influenza and pneumonia. *Menstrual History:* Began at 14; always regular; duration five days; flow scant; moderate pain during first day. Last menstruation occurred March 15 and was quite profuse. Estimated date of confinement, December 22. *Previous pregnancies,* considerable headache and edema of the feet. *Present pregnancy* has had the same symptoms plus disturbance in vision. The five *previous labors* were normal, and spontaneous. She had four miscarriages, cause not known.

Present History.—This patient on the day previous to her admission to the hospital fell to the floor, striking her head. She does not remember having struck any other portion of her body. She apparently went into labor at seven o'clock the fol-

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lowing morning, having some flow. She sent for her physician who, upon his arrival, found her bleeding profusely and, therefore, sent her to the hospital in an ambulance where she arrived about 1:40 P. M.

Examination.—Patient is of moderate height and weight, very pale, no air hunger manifest. Pulse 124, poor in quality, systolic murmur over base of the heart not transmitted. *Abdomen:* Uterus size of nine months' pregnancy, very tense and board-like, uniformly tender. Palpation of fetal parts impossible. Fetal heart inaudible. Rectal examination disclosed an elongated undilated cervix. Presenting part high. A diagnosis of accidental hemorrhage of the combined type was made. *Blood Examination:* Red cells 3,380,000; white cells 16,600; hemoglobin 80 per cent (Tallquist). Blood pressure 174/132. *Urinalysis:* Sp. gr., 1,020; amber in color; acid reaction; albumin present; no glucose.

The bleeding had almost ceased and the patient began to rally some, though there was no change in the abdominal signs. She was given 1,000 c.c. of saline solution intravenously, later 400 c.c. of blood was transfused from her husband. Forty minutes after the completion of the transfusion she was taken to the operating room. Abdominal delivery was decided upon, not in the interests of the child which had evidently perished, but because it offered the patient the best chance of life.

Operation.—Preoperative preparation was done on the table. Anesthetic: nitrous oxide with a small amount of ether. The pulse at the beginning of the operation was 150. An incision four inches long, with its center opposite the umbilicus, was made slightly to the left of the median line. One c.c. pituitrin given. The uterus, when exposed, was found large and very tense, of a mottled purplish color, and ecchymotic in appearance. The peritoneal cavity contained from one and one-half to two pints of sero-sanguinous fluid. Cutting the uterine muscle it looked almost normal in color, showed no areas of hemorrhagic infiltration, and did not bleed as freely as the average case. When the amniotic sac was opened the fluid spurted three to four feet above the patient's abdomen, so great was the intrauterine pressure. The child was promptly delivered and found to be dead. Blood clots sufficient to fill an ordinary wash basin were scooped out and the uterus quickly closed with two layers of interrupted chromic catgut suture. The abdominal wall was closed in the usual way. Time of operation 24 minutes.

The pulse at the close of the operation was still poor in quality, though there was little fresh bleeding either during the operation or following it. One thousand c.c. of saline solution were given intravenously, and one hour after the completion of the operation she had recovered from the anesthetic and said she felt fine.

On the sixth day after the operation she developed a temperature of 102°F. and a septic sore throat, running an afternoon temperature for five days. Believing that another transfusion would increase her resistance, she was given 250 c.c. of her husband's blood; following this she improved, clinically, her temperature falling to normal. As after the first transfusion her white blood-count increased considerably, from 24,000 to 40,500; the first increase having been from 16,600 to 26,500. She was discharged on her twenty-third day, much improved.

Interesting points in this case are: 1. Of the several causes advanced as factors in the etiology of accidental hemorrhage, this patient presented three, viz., trauma, a marked pregnancy toxemia, and a short umbilical cord (17 cm.). 2. Extreme intrauterine pressure. 3. Gross appearance of the uterus in situ, corresponding to that described by Wing,¹ and by the author in a previous publication.² 4. Relatively large amount of free peritoneal fluid. 5. Leucocytosis and clinical improvement following the two transfusions.

¹Wing, L. A.: Report on Two Cases of Accidental Hemorrhage, Bulletin Lying-In Hospital, City of New York, April, 1916, p. 162.

²Quigley, J. K.: Accidental Hemorrhage and Its Treatment, New York State Jour. Med., November, 1916.

CASE 2.—Hematuria in pregnancy. Mrs. S. F., aged thirty; para I; private case No. 453. Family history, negative.

Personal History.—Simpler diseases of childhood, appendectomy at 24, "clean case" with this exception, patient has been quite well all her life. Menstruation began at 13; quite irregular at intervals varying from six to eight weeks; flow moderate in amount and accompanied by some pain.

Married nine years and never pregnant before. Three years ago she underwent an operation on the cervix for sterility. Last menstruation September 16 (three months ago). She has suffered from a moderate amount of nausea and slight vomiting. No headache. No constipation. Physical examination shows patient of moderate height and weight, well nourished, and of good color. She has a well compensated mitral regurgitation. Lungs normal. Pelvic measurement normal. Blood pressure 128/80. *Urinalysis:* Amber in color; clear; acid reaction; sp. gr., 1.020; no albumin or glucose; no sediment. Vaginal examination confirmed the diagnosis of pregnancy. With the exception of some digestive disturbance, the patient, objectively and subjectively, was quite normal until April 26, four months after her first visit; and in the seventh month of her pregnancy, the urine showed a good trace of albumin, a moderate number of leucocytes, and a few red blood cells. The blood pressure was 122/78, and her only complaint, at this time, was excessive "heart-burn." A simple antacid mixture was prescribed and the proteins in her diet much reduced.

For four weeks the urine examinations were about the same, viz., a trace of albumin, a few leucocytes and red blood cells; but she developed an almost intolerable general pruritus and insomnia. She had neither headache, nausea, nor epigastric pain.

On May 31, five weeks after the first appearance of albuminuria, the systolic blood pressure rose to 142, and the urinalysis showed smoky color; acid reaction; sp. gr. 1.019; albumin, 2 per cent; sediment contained a preponderance of red blood cells; no casts; no renal cells.

Her confinement to bed and the milk diet, begun four days before, were continued. Three days later a more complete urinalysis showed a smoky specimen; total solids low, 21.4 gm.; urea low, 4.6 gm.; trace of albumin; many red blood cells; no casts. June 10, she developed slight edema of the ankles, and the systolic blood pressure rose to 160. At times the urine was quite red and smoky. During the next fortnight her blood pressure remained high; but the hematuria and albuminuria gradually diminished.

There were at no time symptoms of toxemia beyond the insomnia and pruritus. A failure to more thoroughly analyze this case by cystoscopy, blood chemistry, and renal function test was due to the fact that the patient was near term, and because after rest in bed and regulation of diet the hematuria cleared up and never returned.

On June 25 she went into labor. After nine hours of severe pains, I found a fully dilated cervix, head floating above the inlet and a tonically contracted uterus. Because of this, and a history of ten years' sterility, and great desire for a living child, Cesarean section was offered as the safest delivery. This was accepted by the patient and the operation performed. Her convalescence was uneventful; the blood pressure fell to very near normal, and the albumin disappeared.

Of the various causes offered for hematuria, and for hematuria in pregnancy in particular, it seems to me that the most plausible etiologic factor in this case was a toxemia, as evidenced by increased blood pressure and edema.

Society Transactions

AMERICAN ASSOCIATION OF OBSTETRICIANS, GYNECOLOGISTS, AND ABDOMINAL SURGEONS. THIRTY-THIRD ANNUAL MEETING HELD IN ATLANTIC CITY, N. J., SEPTEMBER 20-22, 1920.

THE PRESIDENT, DR. GEORGE W. CRILE, IN THE CHAIR.

DR. JOSEPH H. BRANHAM, of Baltimore, Md., read a paper on **Some Interesting Surgical Conditions of the Liver and Biliary Tract**. (For original article see page 331.)

DISCUSSION

DR. ORANGE G. PFAFF, INDIANAPOLIS, INDIANA.—It would be well to emphasize one point in connection with this paper, namely, that we must aim to be conservative in the treatment of gall bladder diseases. In the last few years the statement has been frequently made that a gall bladder once diseased is always diseased, but that is not always so. If we open the abdomen on account of symptoms and find no stones, and find comparatively little pathology that is demonstrable, and if the gall bladder is not easily emptied by compression I believe that gall bladder ought to be drained.

DR. BRANHAM (closing).—I wrote this paper largely to put on record a case of fistula between the gall bladder and the stomach. The only other mention of this condition I can find in literature is by Dr. Deaver, as quoted in this paper.

DR. ROBERT T. MORRIS, of New York, N. Y., read a paper entitled **Where the Rubber Glove Is Behind the Times**. (For original article see p. 334.)

DISCUSSION

DR. HERMAN E. HAYD, BUFFALO, NEW YORK.—We all agree with Dr. Morris that long incisions are perhaps in most cases unnecessary, and particularly when the object is to investigate a lot of possible pathology which the ordinary diagnostician ought to have made out before he operated. He did us a good service when he taught us to do our surgery through small incisions and to develop our faculty of tactile sense; but I was rather surprised that such a judicial operator should have put before this association so strongly the results of the work of Kennedy who is one of the representatives of the well-known Joseph Price. However, when he tells us that 99 per cent of the cases that other men operated on who wore gloves had adhesions, as quoted by Dr. Morris, and he and others only had 7 per cent adhesions without the use of gloves, I consider the statement ridiculous. Out of 100 cases there were at least some 60 to 75 per cent that were the simplest kind of operations which could only have taken a short time to perform and would have

achieved the best results that Dr. Morris expects from the physiologic era of surgery. There is no need because we wear gloves to produce traumatism from handling the tissues and there is no necessity except in the rarest cases in exploring the abdominal cavity to find possible foci of irritation or pathologic lesions. I do not believe Kennedy's deductions and I do not believe it is possible that adhesions could take place in the hands of 99 men from the use of rubber gloves, and Kennedy's patients only have 7 per cent adhesions.

DR. CHARLES L. BONIFIELD, CINCINNATI, OHIO.—I approve of the first three sentences in which Dr. Morris tells us that if we were to standardize the medical profession we would immediately stop progress. A few years ago the Carnegie Foundation sent out a report with the endeavor to induce us all to teach medicine exactly alike, and as a consequence various colleges all over the country were turning out medical graduates as much alike as peas from the same pod. Now, the American College of Surgeons is trying to have us make our histories exactly alike. It would be no more ridiculous to make each one of us read papers alike before this association. Every one of us agrees that we should have complete histories, but to make me follow out exactly the method of others is a foolish thing. We want to provide for individuality.

When it comes to the rubber glove proposition, I, like Dr. Hayd, cannot believe the rubber glove in and of itself causes adhesions. I can conceive of a man with rubber gloves being rough, and a man without rubber gloves scratching tissues with his finger nails. One of the things that induced me at an early date to use rubber gloves was the fact that my finger nails were very hard to keep clean. I seldom knew whether I had them clean or not, and I felt it was better to cover them up with something that I could boil. That the rubber glove does obstruct tactile sense a little nobody denies. For the purpose of making a minute and accurate diagnosis, I do not want to use a glove in making a vaginal examination. If a man does not often get his hands in pus, he can keep them fairly clean and sterilize them sufficiently to get along, but the average man will do more aseptic surgery if he uses rubber gloves.

DR. JOHN W. KEEFE, PROVIDENCE, R. I.—There is no question that a man with rubber gloves on cannot feel as readily as though he did not wear them. When rubber gloves first came into use I employed them in almost all the cases I had, but now and then I met with difficulties, so I took the gloves off as I thought I could feel better without them. I told Dr. McBurney about my difficulty and he said that this attitude was a mistaken one. The gloves should be kept on in a difficult case and your fingers educated as to how differently things feel with the gloves on. I have practiced that ever since.

It seems to me when you have educated your fingers to the feel of tissues with the glove on, there is very little difference between that impression and one without the glove. Of course it takes some time to educate the sense of touch with a glove on. Undoubtedly the rubber glove has done more to save lives than any other thing among surgical appliances.

DR. ABRAHAM J. RONGY, NEW YORK CITY.—I believe that rubber gloves protect us from infection. This was vividly impressed upon my mind in the case of one of my former chiefs who received a primary chancre of the right hand while attending an obstetrical patient.

In a city like New York, not only is it unsafe to operate without gloves, but it is unsafe to examine patients in the office without them. As a measure of protection, gloves are one of the best things for the physician to use.

DR. MORRIS (closing the discussion).—In regard to the remarks of Dr. Hayd, I took Dr. Kennedy at his word. He referred to adhesions to the abdominal line of incision, and not to other adhesions.

Dr. Bonifield brought up the question of standardization. We have to bear in mind what would have happened if Darwin and Galileo had been standardized according to the thought of their day.

Dr. Hedges asked why we need to use longer incisions with gloves. Simply because the tactile sense is diminished, and we have to bring into employment another sense. Instead of using one sense we use two, and the second one is poorer in quality than the first.

In regard to Dr. Rongy's remarks, I brought out the point that it is only in peritoneal surgery that the surgeon is behind the times if he employs rubber gloves in his work. As a general statement, the use of rubber gloves is one of the most distinct advances ever made in surgery. They belong to standardization and I employ them religiously except in this one field, where neater and safer work is done without them.

DR. EDWARD J. ILL, of Newark, N. J., described **The Gehrung Pessary for the Relief of Cystocele**. (For original article see page 338.)

DISCUSSION

DR. ABRAHAM J. RONGY, NEW YORK CITY.—I was confronted with the same problem in the case of a woman who has had a high blood pressure and also a complete procidentia for a great number of years. Another woman, seventy-two years of age, had a complete procidentia and was very miserable. No mechanical manipulation could retain the uterus in the vagina, so I decided to operate on these patients, resorting to sacral anesthesia, and the only pain the women had was when I entered the anterior fold of the peritoneum and after that they had no pain whatsoever.

As to the question of the use of pessaries, I have tried every pessary on the market, and I have come to the conclusion that the only way to use a pessary is to make it and mould it in the office according to the dimensions of the vagina. The only contrivance that will hold a heavy uterus in a relaxed vagina is a soft rubber pessary which will fit around the cervix, and this supported by a hard rubber pessary. The hard rubber pessary will distend the vagina, and the soft rubber pessary will prevent the cervix from coming down.

DR. CHARLES L. BONIFIELD, CINCINNATI, O.—The use of pessaries has gone out of fashion and I explain to patients when I use a pessary that it is not a curative agent, but enables them to be up and around like a crutch enables one with a broken leg to do so. Many gynecologists of the younger generation do not understand the principle upon which the pessary acts. The effects of a good retroversion or retroflexion pessary is practically the action of shortening the uterosacral ligaments; it pulls the uterosacral ligaments over the lever put up behind the uterus. A retroversion or retroflexion pessary will never act satisfactorily unless the patient has a normal posterior culdesac. A second requisite for a pessary to work properly is a vagina with sufficient muscular coat to hold the pessary in position.

DR. HERMAN LORBER, NEW YORK, N. Y. (by invitation).—I want to say that under the instruction and guidance of Dr. Herman J. Boldt we have used the Gehrung pessary for fifteen years. We have often made these pessaries out of

round hard rubber pessaries. The front bar should rest behind the symphysis and the cervix in the concavity between the two bars. It takes up the slack in the vagina and the front bar resting behind the symphysis prevents the bladder from coming down. It will often work when no other pessary will act satisfactorily.

DR. K. ISADORE SANES, PITTSBURGH, PENNSYLVANIA.—I have been using the Gehrung pessary with excellent results. Whether the position as shown by the essayist is the only correct one I do not know. As I insert it the pessary lies with its concavity up so that its narrower two bars are in the lateral fornices.

DR. ILL (closing the discussion).—I want to emphasize the fact that this pessary is for the purpose of holding up a cystocele of moderate extent. It should be used only in patients in whom we cannot operate. Gehrung has worked out this form of pessary with such success, I do not see how it can be improved.

DR. JAMES E. KING, of Buffalo, N. Y., presented a paper on **Endocrine Influence, Mental and Physical, in Women**. (For original article see page 341.)

DISCUSSION

DR. WILLIAM M. BROWN, ROCHESTER, NEW YORK.—I understood Dr. King to make the statement that during pregnancy there was a high sugar tolerance. I have seen it stated and personally believe that during pregnancy there is a very low sugar tolerance.

DR. GEORGE W. CRILE, CLEVELAND, OHIO.—While listening to the fascinating and interesting paper of Dr. King, I recalled the fact that when some years ago we were doing experimental work, we found that the injection of extract of the placenta caused a very markedly increased output of adrenalin, and that it also produced a hyperchromatism of the brain cells. Adrenalin alone causes hyperchromatism of the brain cells. It would appear, therefore, that the placenta acts upon the adrenals directly. We all know that the thyroid gland governs and activates most of the body, including the other endocrine glands; and it has been shown that adrenalin will increase the activity of the thyroid. The enlargement of the thyroid gland during pregnancy, as well as during sexual activity, is very marked. This interaction is to be interpreted as Dr. King has suggested on a mechanistic basis. Dr. King's conception of human behavior, human evolution, and human development is more or less mechanistic, and is in accord with my own point of view that our further knowledge of the phenomena of pregnancy as of all other normal and pathologic phenomena will be better understood as we become better able to interpret them on a mechanistic basis.

DR. KING (closing the discussion).—Dr. Brown has asked regarding high sugar tolerance. Every pregnant woman has not high sugar toleration. It is only those that have the suggestion of acromegaly, and the physical changes and evidences of hypopituitary secretion.

There are many interesting things that might have been considered. In estimating the effect of these glands upon the mentality and the behavior of women, we must take into account environment and education and the natural surroundings of women, but fundamentally I believe, as Dr. Crile has indicated, that we shall find a great many of the impulses we have hitherto regarded as fundamentally due to the intellect to be due to the stimulus of the endocrine system.

DR. THURSTON S. WELTON, of Brooklyn, N. Y., read a paper entitled **Double-Flap Low Cesarean Section Results.** (For original article see page 350.)

DISCUSSION

DR. JAMES K. QUIGLEY, ROCHESTER, NEW YORK.—I should like to ask Dr. Welton to describe his technic in delivering the placenta and the way it was done. I understand it was through the vagina.

DR. WELTON.—No. I said it might be pushed through the cervix, but usually we delivered it through the wound.

DR. QUIGLEY.—If infection comes from infecting the liquor amnii, what is the rationale of protection in these cases?

DR. PAUL TITUS, PITTSBURGH, PENNSYLVANIA.—I think Dr. Welton brought out an important point when he referred to the condition which he termed potential infection. It requires comparatively little manipulation to place a case in the category of "potentially infected," and the ordinary classical Cesarean section then becomes a hazardous matter for a patient where it might have been of little or no risk to her had she been let alone. Mortality, or at least morbidity, increases in direct ratio to the length of time a patient has been in labor before a classical Cesarean section is decided upon, and the rupture of the membranes definitely increases the mortality of this operation. In other words classical Cesarean section should be done only under ideal circumstances in order to obtain good results.

Some type of extraperitoneal Cesarean section can be substituted in cases which are possibly infected, whereas the Porro operation can still be done in those which are probably or definitely infected. The operation which Dr. Welton has described seems to be a modification of the Kroenig-Gellhorn method of performing extraperitoneal Cesarean, the term extraperitoneal meaning, of course, that the point of incision into the uterus is made extraperitoneal before the uterus is actually opened.

For about seven years I have been using Frank's original method which incises both the parietal and the uterine peritoneum and then by suture unites the parietal leaf to the uterine, thus making a peritoneal fistula down to the surface of the uterus. This operation I applied to some twenty or more cases which were, as Dr. Welton has termed it, potentially infected. Some of them, indeed, were so doubtful that rather a risk was taken in employing even this operation. It proved uniformly satisfactory, however, and I have had the opportunity subsequently to perform classical Cesarean section on four of these women. The abdominal cavity was free from adhesions even in those women who had been drained through the original wound and the general results in the abdomen were far better than after the average classical operation. For all other cases I employed the classical Cesarean up to about eighteen months ago.

About that time DeLee of Chicago read a paper before the American Medical Association here at Atlantic City in which he definitely preferred the Kroenig-Gellhorn type of lower uterine segment incision to the classical Cesarean. At the time I was quite skeptical of the advantages which he outlined for this operation, but shortly after we had some disturbing results with some cases in my clinic which were allowed to go some time in labor, of course without vaginal examinations. These patients all had borderline contraction of the pelvis and it was hoped that they might be able to deliver themselves. Classical Cesarean section was done on them because they were supposedly clean cases, but one after another developed elevations of temperature that were very disconcerting, to say the least. In consequence of that I began doing the Kroenig-Gellhorn type of operation, which is quite similar to the one

the essayist has described, except that by turning down a triangular flap the suture line in the uterus does not cross under the suture line in the peritoneum. At first this was used only in case a test of labor had been given, but the general advantages and benefits which Dr. Welton has outlined have been experienced so uniformly in my patients that I am thoroughly converted to the idea that this type of operation is superior in every way to the old classical Cesarean section.

DR. ROSS McPHERSON, NEW YORK CITY.—There has been a little query in my mind as to the peritoneal spill. I can see that in this operation the spill, of course, takes place in the lower part of the abdomen whereas in the classical operation the spill is all over the abdomen, which may account for the general peritonitis instead of a local one in this new operation, but for the seriously infected cases I have been doing the real extraperitoneal operation for some time. I do not use the Hirst operation for the simple reason that if you could open a woman's abdomen and suture the uterine peritoneum to the abdominal peritoneum and leave it for twenty-four hours it would be all right but I do not see any reason why bacteria should not come through suture holes into the abdominal cavity. If an extraperitoneal operation is indicated, why not do true extraperitoneal procedure? We have done a good many of them at the Lying-In Hospital in New York City with perhaps not as good results as Dr. Welton and Dr. Polak have had in their cases but infinitely better than a craniotomy on a living child or a dead mother as the result of the classical operation.

DR. E. GUSTAV ZINKE, CINCINNATI, OHIO.—When Saenger, of Leipsic, formulated the modern classical Cesarean section, we thought the *ultima Thule* had been reached; but it seems not. However, what he said at the time remains true still; namely, that the success of the operation depends upon the perfect union of the uterine wound.

I can see no particular advantage in the operation presented. If there is a real infection and the uterus is left behind, this operation does not prevent a spread of the infection. All depends upon the nature of the infection. If you have merely the saprophytic infection, your patient, in all probability, will recover if the proper precautions and after-treatment are applied. If you have a streptococcal infection, no operation will prevent extension of the infection. It is an operation which, in some instances, may do good; but all will depend upon the nature of infection in the case.

DR. WILLIAM M. BROWN, ROCHESTER, NEW YORK.—I have not yet convinced myself that there was any need for the low Cesarean section. I cannot see why we should have an amniotic spill. You can prevent soiling of the peritoneum just as well in doing Cesarean section through a small incision above the umbilicus as you can by a low incision, and I believe the peritoneum will take care of the ordinary infection, so far as amniotic spill is concerned. I do not worry about that at all. I keep the peritoneum; I do not traumatize it by mopping. It has been a long time since I have had a death from Cesarean section. It has been my custom to clamp the uterine incision right to the abdominal wall, and very often I never see any contents of the peritoneal cavity excepting the uterus, and I do not have any amniotic spill or any soiling of the peritoneum. It seems to me, when you take the added time and added difficulties and added traumatism in the lower uterine segment in peeling off the peritoneum intact; where the infection is down in the lower part of the uterus or in the cervix, you are traumatizing an area where infection is going to spread, and if you get an abscess in the vesicouterine space, you will have more trouble than anywhere else, I would take my chances even with a virulent infection by doing a high classical Cesarean section.

DR. JOHN O. POLAK, BROOKLYN, N. Y.—In defense of this procedure I wish to call attention to two or three points. In the first place, I do not think any of us believe that we get infection from the amniotic spill. The infection comes in a different manner. From a study of our autopsy findings, and we have had autopsies upon a number of classical Cesarean sections who have died of peritonitis, we get the same picture we get in a suppurating wound of the abdominal wall. Along the course of the stitch hole we get infection from the endometrium out. We do not believe that those patients that actually have infection of the lymphatics going into the blood, will live with this procedure. We do believe, however, that those cases that would have ordinarily died of peritonitis by the transit of bacteria from the endometrium to the peritoneum along the suture line, will survive with this technic, for instead of a peritonitis we confine our infection to the parametrium. We have had several abscesses from the lower segment and they were extraperitoneal. Two of them discharged through the wound in the uterus. Early rupture of the membranes exposed the woman to definite infection of the endometrium; that is, the endothelial lining or covering of the amnion cells is changed and the resistance of the woman is diminished. We have found by pathologic study that there is a deciduitis in these cases in the placenta. I have seen these patients recover after one rise of temperature between the first and sixth day.

With regard to the Frank operation, we did that prior to adopting Beck's procedure, and the objection we had to it was that it took more time, and we frequently opened into the peritoneal cavity by accident.

One other point in regard to the placenta. In those cases in which there has been definite evidence of infection, we have been in the habit of pushing the placenta right through the vagina out instead of drawing it through the wound. We have been thoroughly impressed by the fact that technically this operation is not difficult. The wound is low down, and we believe from the limited experience we have had, it is not as liable to cause subsequent rupture as the higher wound. That is the simple claim we make at the present time. We have had three of these women come back and go through labor again. We hope to have all of them if we can.

DR. WELTON (closing the discussion).—Dr. Polak has very kindly answered most of the questions asked by Dr. Quigley, Dr. Brown, and Dr. Zinke, and I will only speak of one point that Dr. Titus brought up regarding his operation and the operation we do.

The shorter duration of the operation, the ease of exposure, the very few technical difficulties and less troublesome delivery of the child are points apparently in favor of the classical section, and may be regarded by some as disadvantages of the technic we have described. These disadvantages, however, scarcely warrant consideration if further experience with our procedure continues to show as it has shown in the past that it offers better protection against hemorrhage, peritonitis, and adhesions, and is followed by an easier convalescence and less risk of uterine rupture during a subsequent pregnancy.

DR. EDGAR J. DARNALL, of Atlantic City, N. J., presented a report on a case of **Hernia of the Ileum through a Rent in the Mesentery**. (For case report, see page 366.)

DISCUSSION

DR. GEORGE A. PECK, NEW ROCHELLE, NEW YORK.—May I ask the writer whether he did an anastomosis with the Murphy button at the time of operation?

DR. DARNALL.—There were two operations, one of which was an anastomosis made by the Murphy button, and the other an operation for hernia.

DR. PECK.—My point is whether resection of the intestine should be done during obstruction. If an enterostomy can be done at that time and drainage secured, it is a much shorter operation, and patients often will recover from enterostomy, which is a short operation, where they would not recover from a long operation as in doing an end-to-end or any other form of suturing or uniting the bowel after resection.

I want to make the point whether we should not, when we possibly can, in obstruction of the bowel, do enterostomy, and not a resection of the bowel.

DR. CHARLES L. BONIFIELD, CINCINNATI, OHIO.—I want to make a remark on the point the last speaker brought out, namely, whether we should resort to enterostomy or to anastomosis in case of obstruction of the bowel. In my opinion that depends more on how long the obstruction has existed than on the immediate condition of the patient. It has been pretty well demonstrated that when there is partial or complete obstruction of the small intestine, the contents of the bowel above the seat of obstruction become poisonous, and that if we release the contents into the healthy bowel below, our patient will often suffer collapse and die from poisoning in a few hours as if we had not operated, while if the intestine be drained, the patient will get well.

DR. ROBERT T. MORRIS, NEW YORK CITY.—I would like to emphasize the point brought out by Dr. Bonifield, as I think it is the crux of the whole situation.

DR. DARNALL (closing the discussion).—The contents of the intestine had already drained out and were free in the abdominal cavity. There was no obstruction from above.

As to whether we should make an enterostomy and do drainage or not, or whether we should do anastomosis, I think, as Dr. Bonifield says, it is largely a question of the condition of the patient and where the obstruction is. In the fistulas of the upper bowel we all have had the experience that if we allow them to continue to drain, the patient becomes dehydrated, is soon exhausted and dies; whereas if the fistula is around the lower ileum or in the colon, we do not have that trouble, the fistula has a tendency to close spontaneously and the patient recovers. So, it seems to me, a point of good judgment that we do not drain the upper part of the bowel too much.

DR. O. G. PFAFF, of Indianapolis, Ind., presented a report on a case of **An Unusual Abdominal Cyst**. (For case report, see p. 367.)

DR. WILLIAM M. BROWN, of Rochester, N. Y., presented two case reports: **1. Encephalitis Complicating Pregnancy near Term. 2. Malignant Disease of the Cervix in a Young Primipara**. (For case reports, see p. 368.)

DR. JOHN WILSON POUCHER, of Poughkeepsie, N. Y., presented a case of **Rupture of the Bladder during Labor**. (For case report, see p. 371.)

DR. JAMES K. QUIGLEY, of Rochester, N. Y., reported two cases: **1. Accidental Hemorrhage with Cesarean Section. 2. Hematuria in Pregnancy**. (For case reports, see p. 372.)

THE NEW YORK OBSTETRICAL SOCIETY. MEETING OF
OCTOBER 12, 1920.

THE PRESIDENT, DR. FRANK R. OASTLER, IN THE CHAIR.

DR. ALBERT M. JUDD presented a case of **Sarcoma of the Ovary**.

Dr. Judd stated that he presented this case not because of the rarity of sarcoma of the ovary, but because of the unusual complication of a twisted pedicle in a solid ovarian growth.

The patient, sixteen years of age, single, was admitted to the hospital, September 10, 1920, with a history of severe abdominal pain which came on with the onset of the last menstrual period on September 3, persisted throughout the same and continued for five days after its cessation. Her menstruation began at eleven, was regular except the month before the last period, during which she flowed on three occasions four days at a time. A severe dysmenorrhea was usually present on the first day of each period. The patient on admission presented the appearance of acute illness. Examination of the abdomen showed a spherical mass in the right lower quadrant extending up to the level of the umbilicus. This mass was tender to the touch but there was no evidence of peritoneal irritability; no abdominal distention or rigidity. The hymen was intact and a rectal examination showed a uterus of normal size with the right fornix occupied by a mass. Operation was done on the next day through a median abdominal incision and a tumor about the size of a grapefruit was found, which sprang from the left ovary by a long pedicle twisted three times. The surface of the growth was markedly congested and the left tube, which was involved in the twisting process, was gangrenous. The appendix was acutely inflamed. The left tube and ovary were removed, likewise the appendix, and the wound closed in layers without drainage. A preoperative blood count showed a white cell count of 18,400 with 83 per cent polynuclear cells and 17 per cent lymphocytes. The patient made an uneventful recovery and the wound healed by primary union. The pathologist reported the tumor to be sarcoma.

DISCUSSION

DR. L. W. STRONG.—Solid tumors of the ovary are not very common. Fibroma is the commonest and next myoma. As to sarcoma, I think the figures given generally are that from 5 to 10 per cent of all ovarian tumors are sarcomatous. As for the twisting of the pedicle in a solid tumor rather than a cystic tumor, it seems to me that the globular tumor is more labile in its anchorage than the solid tumor. In a solid tumor the attachment is firmer than in a globular tumor. It is more apt to have a broad attachment, and that is the only reason I can give for the fact that twisted pedicles in solid tumors are unusual.

DR. J. M. MABBOTT.—I recall a case of a young woman who had a solid tumor. She went several months without menstruating. I suspected at first that she was pregnant and frankly told her so, although she was unmarried. Later I became satisfied that she had a solid tumor in the pelvis, but I was unable to persuade her to go promptly for operation. One night she had a severe attack of pain and was taken to New York Hospital, and we found a solid tumor of considerable size with a large twisted pedicle and so congested that it was actually oozing a bloody serous material into the peritoneal cavity. The patient recovered rapidly from the operation, but within one year she developed a diffuse, nodular sarcoma in the pelvis and abdomen and was operated in the Presbyterian Hospital; but within a few hours the

patient succumbed from the operation which was little more than exploratory, having been deferred too long. It was a dermoid cyst to begin with, containing hair, fragments of bone and teeth.

DR. HERMANN GRAD.—I recall a case of a pelvic tumor in which both ovaries were solid. One tumor was quite large, the other was somewhat smaller. Both tumors were removed and proved to be sarcomatous. In that case the patient had a metastasis within four months and died. Those are the only solid ovarian tumors I have seen.

DR. L. M. STRONG.—Dr. Judd suggested that I might make some reference to the question of removing the other ovary. I think this should be done. The tendency to metastasis from one ovary to the other is very noticeable, not only in sarcomata, but in all malignant conditions, and for that reason it is not unusual to find them to be bilateral.

DR. F. R. OASTLER.—Should the uterus likewise be removed?

DR. L. W. STRONG.—In answer to the question as to the removal of the uterus, I would say there is nothing against it. In malignant tumors it should be done.

DR. H. N. VINEBERG.—I have encountered a number of solid tumors of the ovary and I would be very sorry to have it go forth from this society that where there is a sarcoma of the ovary it is necessary to remove all the pelvic organs. In at least four cases that I have been able to follow up, in which the involved ovary was removed, there has been no recurrence for several years. I particularly recall the case of a young woman with an enormous carcinoma of the ovary, in which case I simply removed the growth. She was a girl then and was supposed to be pregnant because she had such a large tumor. She married afterwards and I kept track of her for ten or fifteen years. She had a child and remained perfectly well. Another patient from whom I removed a solid growth of the ovary (sarcoma) lived a number of years and died of an intercurrent disease. A third case in a girl eighteen years of age, with myxosarcoma of the right ovary and a very large ascitic collection in the abdomen, was operated in 1900. She married later and has had three children. I would therefore not advise removing all the organs because one ovary is malignant. I think in those cases that have been reported here, even where the condition was double, nothing was gained by removing the uterus, as recurrences occurred very early.

Another case which is more relevant to the subject under discussion tonight, was the case of a solid tumor of the ovary, which I recognized as such. The doctor who referred the case was a very conservative internist. He did not follow my advice of having the patient operated promptly, but, instead, said he would keep the patient under observation. About three months afterwards he called me up and said that the patient had been seized with severe pain and was in collapse and he wanted her admitted to the hospital. This was done and the patient operated on. The growth in this particular case was solid with a twisted pedicle, and there was a rupture of the tumor, which was partly cystic, resulting from the twist. The patient died a short time afterwards from recurrence because the sarcomatous elements were spread all over the abdomen. But the thing that I should like to lay emphasis on (because I think very few of us have had many cases, although it has fallen to my lot to have seen quite a number) is that by limiting ourselves simply to the removal of the growth the results obtained are good, and it is not necessary to remove the other ovary, if normal, or the uterus.

DR. ALBERT M. JUDD.—I did not report this case because it was a sarcoma of the ovary, but simply because of the twist, which, in my experience, is rare in solid

tumors. I made the suggestion to Dr. Strong that I had expected to be criticised for not removing both ovaries in view of the fact that one ovary was sarcomatous. This tumor was of the left ovary, fell over the uterus in front into the right fornix and the pedicle was twisted three times.

DR. LAWRENCE W. STRONG read a paper on **Vaginal Cysts**. (For original article see page 357.)

DISCUSSION

DR. ALBERT M. JUDD.—I had two cases of labor, where I had to remove from the vault of the vagina, in order that labor might proceed, a cyst located in the posterior fornix, which was large enough to interfere with delivery. Although not studied microscopically they evidently were of the type described by Dr. Strong as developing from the ampulla of Gärtner's duct. I saw also last winter at the Jewish Hospital a bilateral vaginal cyst about the size of a half-dollar, which we removed in the course of plastic work on the vagina. These tumors are of considerable interest to the obstetrician.

DR. S. H. GEIST.—I have here a gross specimen of a cyst which Dr. Brettauer removed a few days ago. This cyst is typical of a Gärtner's cyst. It was in the right side of the cervix, extending into the right vaginal vault. It was dissected out entirely. There was nothing unusual in the history of the case. The diagnosis was a simple one, but it was a rather difficult operation. However, it came out completely. It is unusual because it has a rather thin wall. The uterine artery was close to it and had to be pushed aside very carefully.

DR. JOSEPH BRETTAUER.—The fact that there are two men present who have come across vaginal cysts appearing with labor must change the aspect of these cases. Dr. Strong says they have no clinical significance. In that I do not agree with the doctor.

I know of a young woman who was confined three times without incident although she had one of these cysts before her marriage. When her fourth baby was born, the cervix was fully dilated. I did not confine her at any time, but I saw her three times and saw her during her labor with the fourth baby. She had had three perfectly normal labors. There was only one thing to do, and that was to open the cyst and drain it and let labor continue. The cyst was opened and in fifteen minutes the baby was born. After six months it closed again, began to grow, and had to be shelled out.

These cysts are not very common. Vaginal cysts lower down are more common. In these cysts, so far as I remember, one never finds any squamous patches. The embryologic history would rather make that an unusual finding.

DR. FLORIAN KRUG.—I am glad that Dr. Geist, as well as Dr. Brettauer, mentioned the fact that there are technical difficulties connected with the removal of these tumors. Many years ago I made up my mind as to what I was going to do with the next case that fell into my hands, after enucleation of a very thin-walled cyst. The difficulty with these cysts lies in the fact that they are easily ruptured and after the fluid is out, it is difficult to excise them. After emptying these cysts a sterile solution of paraffin was injected into the cavity (it was not necessary to fill it completely, but just enough to distend the cyst wall). The paraffin was made hard by an ether spray and it was a simple matter to make an incision and shell out the cyst the same as a solid tumor.

DR. H. B. MATTHEWS.—There is one form of cyst that does not belong to the particular variety which has been discussed, but I think it is of some importance. I

have reference to inclusion cysts following perineorrhaphy, where incomplete denudation provides a nidus for cyst formation. In such a case the woman was at term and went into labor. As the head came down a vaginal cyst the size of a lemon produced obstruction and in order to keep from rupturing it, the cyst was enucleated.

DR. LAWRENCE W. STRONG.—I am very glad to be corrected in regard to the interest of these cysts. I said it more by way of apology in presenting a subject which I did not think would bring out so much discussion. The inclusion cysts I would classify with the traumatic cysts. That is why I did not mention them. They present no typical features.

DR. GORDON GIBSON presented a specimen and report on a case of Ruptured Interstitial Pregnancy.

The patient, age twenty-two, negress, was admitted to the Long Island College Hospital on August 24, 1920, complaining of pain in the left lower quadrant of the abdomen. She had been married one year and a half, and had had one spontaneous miscarriage at four months, four months after marriage. Menstrual history regular; last period in May, 1920. On July 15 she began to bleed slightly. This continued for three days and was accompanied by severe pain in the left side of the abdomen. From that time until the day of admission to the hospital she had constant pain

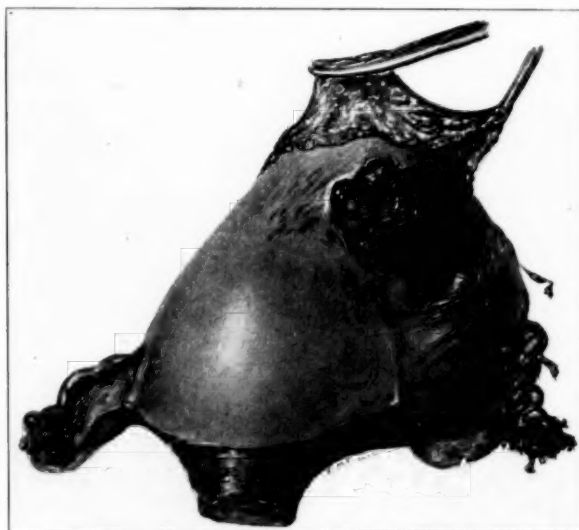


Fig. 1.—Anterior view, after hardening, showing rent in surface of uterus.

in the left side. Pelvic examination on admission showed the uterus the size of a four months' pregnancy, irregular in shape and consistency and a hard nodule about the size of an orange, tender on palpation was noted in the region of the left cornu. A slight, bloody vaginal discharge was present. A diagnosis of pregnancy complicated by a fibroid was made, with an impending abortion. As the symptoms improved, the patient was discharged on September 1. Four days later she was seized with a sudden acute pain in the abdomen and collapsed. She remained in bed during the day and was re-admitted to the hospital September 7th in a condition of shock. The entire abdomen was rigid and tender with the maximum point of tenderness over

a mass in the left lower quadrant. The blood count showed, 2,600,000 red cells, with 40 per cent hemoglobin, and on August 27 this had increased to over 4,000,000 red cells with 65 per cent hemoglobin. With the rest in bed, the general condition improved and operation was finally done on September 10. A considerable amount of clotted blood was found in the abdomen. The omentum and several loops of small intestine were adherent to the fundus. There was a rent in the uterine wall about one and one-half inches long in the left upper anterior surface through which a fragment of placenta protruded. The omental adhesions were divided, the intestines separated from the mass and a supravaginal hysterectomy done. Aside from an attack of bronchopneumonia the patient made a satisfactory recovery. The nature of the specimen was not apparent until a careful examination after hardening. It



Fig. 2—Posterior view, after hardening, showing gestation sac separate from uterine cavity.

was then found that the condition was one of interstitial pregnancy of about four months' duration in the left cornu. The gestation sac was entirely separated from the cavity of the uterus.

DISCUSSION

DR. JOSEPH BRETTAUER.—I never have had a personal experience with a case of interstitial pregnancy, but I desire, in referring to a case, to indorse the doctor's remarks as to the severe hemorrhage which interstitial pregnancies give rise to when they rupture. Fifteen years ago or longer a woman was admitted to the Mount Sinai Hospital in a very precarious condition. The abdomen was full of fluid blood, but the source of the bleeding was not determined. Both tubes were absolutely normal, although a diagnosis had been made of ectopic. They were slightly congested, but there was no rent in them. The abdominal cavity was investigated further and it was flushed out and dried as well as possible. No lesion was found. At the left cornu of the uterus there was a little blood-clot. A rent, not larger than

a quarter of an inch, was found at the junction of the tube and uterus. The tube contracted and stopped the hemorrhage by the time the abdomen was opened. The patient recovered.

DR. H. N. VINEBERG.—As a corollary to the case which Dr. Brettauer just reported a general surgeon opened a case for symptoms of intraperitoneal hemorrhage and also made a very thorough search of the tubes and ovaries and stomach and found nothing. He closed the abdomen and the patient died within twelve hours from continuous hemorrhage. The next day a postmortem examination was made and an early interstitial pregnancy was found which had ruptured.

One of the first cases of interstitial pregnancy which I had was considerably like the one reported here tonight. In this case the patient was admitted on the medical service as a case of general peritonitis. I made a diagnosis of probable rupture of a pregnant uterus. I did not think of interstitial pregnancy at the time. The case was transferred at once to the gynecological service and the abdomen was opened. There was not a great deal of blood in the peritoneal cavity, but the fetus was floating around, with a good deal of meconium, and the intestines were considerably injected. In that case the uterus was removed and the patient made a good recovery.

I had a case last winter in the Woman's Hospital of very great interest and rather puzzling. This patient was 36 years of age and had been married a short time. I did a myomectomy for a fairly good-sized interstitial fibroid four years previously. Shortly after her marriage she went two months without menstruating and then one night she had severe pain and passed a good deal of blood. I saw her the next day and found her in good condition. The uterus was slightly enlarged, the cervix was closed, and I thought she probably had had a miscarriage and that it had all come away.

It was believed that the ovum was expelled. Two or three days later she had another hemorrhage and was sent to the Woman's Hospital. She was curetted and under careful examination I could not find anything in the tubes. There was nothing in the uterine cavity. The uterus was a little irregular, although I thought that that might be due to the former operation. I believed that we had to deal with an interstitial pregnancy. She went along for a day or two without any symptoms and then had severe colicky pains. I thought she had an interstitial pregnancy, as the symptoms could not be explained in any other way. The patient was finally opened up. There was no free blood in the peritoneal cavity. On the left side of the uterus there was a slight bulging not much larger than a walnut and on incising the uterine wall at this point a little ovum was extruded. The rent in the uterus was sutured, the patient made a good recovery and has been perfectly well since.

DR. DOUGAL BISSELL.—The case related by Dr. Brettauer reminds me of the only case of interstitial pregnancy which I have seen. Its history was identical to that related by the doctor and my experience during the operation was similar to his. I am not able to tell you exactly the duration of the pregnancy, but it could hardly have been more than six weeks. The patient entered the hospital in an absolutely exsanguinated condition. There was but one thing to do, and that was to operate immediately. The abdomen was very much distended from the quantity of blood it contained. On opening the abdomen we hastily removed a very large quantity of blood clots. My examination of the pelvic organs surprised me, as I found no rupture of the tubes, and was at a loss to know the origin of the hemorrhage. A little blood clot on the fundus of the uterus about half an inch above the left tube, was wiped away and a small rent in the uterine tissue was disclosed. My first thought was that an instrument had penetrated the uterus, as this rent was just about large enough for a sound to pass. A diagnosis of ectopic was made positive

when a very small fetus was discovered by Dr. Strong, the pathologist, in one of the numerous blood clots removed. The opening in the uterus was so small that all I needed to do was to put in a figure of eight stitch. The hemorrhage had ceased before the operation and the operation was only necessary to remove the great quantity of blood present and relieve nature of the necessity of taking care of so great an amount.

DR. L. W. STRONG.—It is unwise to draw conclusions as to the age of the pregnancy from the size of the fetus, because very frequently it is a stunted, pathologic fetus, and dead.

DR. E. C. SAVIDGE.—I would like to ask whether transfusion is done in these cases, and if so, whether or not it is done before operation and at what limit of red cell count and hemoglobin percentage.

DR. HERMANN GRAD.—I was rather surprised to hear Dr. Gibson say that from the statistics interstitial pregnancy is so rare, because in 53 cases I have had two cases of interstitial pregnancy, one about the fourth month and one much earlier. In both cases the collapse was complete. One case died on the table and the other one recovered. The rent was not very large in either. In the one at four and one-half months the fetus was found loose up under the liver. It was really surprising how a comparatively good sized fetus could escape through such a small opening.

In reference to blood transfusion, I might say I have had six cases of collapse where transfusion was done. My habit has been to begin the transfusion before the abdomen is opened and give the patient 200 c.c. before the incision is made, and while the operation is going on the transfusion is carried on and ended just before closing the abdomen. I might cite a very sad experience which I had the other day with blood transfusion in the Woman's Hospital. The patient was suffering with acute anemia with a hemoglobin of 25 or 26 and her red count was about 2,000,000. I decided to have a transfusion done and got possibly the best man in the city to do it. He examined the blood of both the donor and the recipient and had found a proper donor. He had given about 800 c.c. of blood when the patient said she felt a little short of breath, but he didn't seem to pay any attention to that, which rather surprised me. He put in 200 c.c. more of blood and then the patient became blue and died in fourteen minutes. The doctor told me that this was the second experience he had had where death occurred where the blood was absolutely compatible. It occurred to me while I was watching the patient that it was a case of anaphylaxis, and I understand that the Mayos have published an article in which they claim that the donor should be starved for twenty-four hours before blood is taken from him, because if he has had a large amount of protein circulating in his blood he might give an anaphylactic reaction to the recipient. I think we should all bear this in mind. This donor had had a very good dinner shortly before the blood was taken and after he had fasted all day.

DR. I. C. RUBIN.—I would like to ask Dr. Gibson if, in his search of the literature, he found any explanation given or offered for the occurrence of interstitial pregnancy. It occurs to me that the discussion this evening brought out the fact that rupture takes place at two stages, one of which we have an illustration in the present specimen and the other is one in which the nodule is very small, the case Dr. Vineberg reported, the case Dr. Brettauer reported and perhaps one other.

Now it is very possible that whereas we are dealing in this specimen with an essential interstitial pregnancy which ruptured at the third or fourth month, the other cases were rather ruptures of the isthmic portions of tubal pregnancies situated so near to the horn that they were mistaken for interstitial pregnancies. Indeed, it may be regarded as interstitial. As is well known, the intramural portion of the

tube is embedded in a parenchyma of the uterus where it is still pretty thick. The ovum could burrow into this parenchyma thinning it out and expanding as it continues to grow for three or four months. The uterine musculature tolerates this distention much better and to a greater degree than can the tube. The blood vessels are eroded causing hemorrhage and rupture much later than these occur in the case of the tube. On the other hand, when you come to the beginning of the isthmial portion of the tube you have a very thin affair. Of course, in either case you must have a mechanical obstruction at the uterine end to the course of the ovum.

Now, it is possible that in some of these cases the obstruction is due to the pathologic condition of salpingitis isthmica nodosa. This, if you remember, is ordinarily at the horn of the uterus, occupying a site very close to the interstitial portion of the tube.

I am reminded in this connection of a case which Dr. Charles Goodman, of this city, operated, in which the clinical history was similar to that in Dr. Gibson's case. Dr. Goodman was forced to remove the uterus and could not decipher the specimen. It took me some time to study it and analyze it and finally I thought I had succeeded and still think I succeeded in demonstrating a genuine cervical placentation. In that case the cervix behaved exactly as the intramural portion of the tube. Having sufficient thickness it made way for the expanding ovum until it reached the stage of the fourth month. Then impinging upon the pelvic parietes while the cervical wall became very thin, it finally ruptured. The report of this case was published in *Surgery, Gynecology and Obstetrics* in 1911.

DR. F. R. OASTLER.—I presented to the society two cases of this kind in the last fourteen months. I think I presented three cases altogether to the society since I have been a member, all of which were admitted as such. Two of these cases of interstitial pregnancy ranged around two months. The rupture was close to the cornu in each case. The openings were very small and unless one was very careful one was apt to miss them. The other case was at five and a half months and the fetus was delivered into the abdominal cavity with the placenta plugging the opening.

I learned three lessons from these cases. One lesson was that there are certain cases of ectopic that you must operate on whether you like it or not. In other words, you have to operate on all ectopics because you don't know whether you have an interstitial pregnancy to deal with or not. Some have said it is a good plan not to operate on ectopics, but nevertheless you must operate on all of them. One of my cases died before I could operate, while she was being infused. The second one died shortly after I began to operate. That was the one that was between five and six months' pregnant. These deaths were due to hemorrhage and shock. The third case fortunately got well. The first lesson I learned was to operate on all ectopics. The second lesson I learned was that interstitial ectopics bleed much more severely and much more rapidly than other forms of ectopic gestation; and the third lesson I learned was that it is not always necessary to do a hysterectomy. In the third case I removed one-third of the uterus and sewed the rent together and the patient got perfectly well and has had no further trouble.

One question I would like to ask Dr. Gibson. He said he made a red cell count. Did you make a white cell count too? It is important to make a white cell count as well as a red cell count, because as the red cells go down, the white cells go up.

DR. GIBSON (closing).—Dr. Brettauer spoke about the severe hemorrhage. We have another specimen in the museum of an early interstitial pregnancy. The woman had a hemorrhage in the bath tub and died. The opening in that case was small, about the size of the end of a lead pencil.

Dr. Bissell spoke about the early cases. The important point to bear in mind is this: the time of rupture depends entirely on the location or the implantation of the ovum. If it is near the outside of the cornu, it is going to rupture early. If it is in the middle, it will take longer. If it is near the entrance of the tube, it will probably rupture into the uterus. So the time depends purely and simply on where the thing is located, and the early cases do bleed much more than the later ones. Why that should be I do not know.

With reference to Dr. Savidge's remarks on transfusion: we have an arbitrary rule to transfuse when the hemoglobin is about 30. We were ready to transfuse this patient, but were unable to get any of her relatives to give up their blood. In twenty-four hours she was very much better. I think Dr. Grad's case died because she was given too much blood. We now give 250 to 300 c.c. at a time, which is better with a damaged circulation than putting in a large amount of fluid. That has been our experience.

Dr. Rubin spoke about why these pregnancies locate in the interstitial part of the tube. Bell, I think, has the best description of why ectopics occur primarily. He rather scouts the idea that it has anything to do with previous salpingitis. I believe if you go over all your cases you will find they are pure accidents. Bell's idea is that as trophoblastic action begins motion ceases. As soon as the synechium begins to develop trophoblastic action, there the ovum will stop and it is simply a question of time.

Hysterectomy I think depends on individual conditions. In an early case you could easily take out a wedge-shaped piece of the cornu of the uterus. At first we thought we had a fibroid to deal with and when we got in the abdomen she was not in any shape to debate very much. It was a question of getting in and getting out as quickly as possible.

NEW YORK ACADEMY OF MEDICINE.
SECTION ON OBSTETRICS AND GYNECOLOGY.
STATED MEETING, OCTOBER 26, 1920.

THE CHAIRMAN, DR. HAROLD C. BAILEY, PRESIDING.

DR. JAMES F. GRATTAN reported a case of **Pudendal Hernia, Operated by the Abdominal Route.**

This patient, a woman fifty-three years of age, applied in July, 1918, for the relief of a condition which she described as "irritation in the rectum with difficulty in moving the bowels," and in addition a "bearing down sensation in the vagina," ascribed by two physicians who had examined her within the year to "falling of the womb." The rectal trouble was further described as "a desire to empty the bowels, often quite urgent, but without result except with the aid of an enema." With the examining fingers in the vagina, an impulse was felt against the back of the hand, especially in the adductor region of the left thigh. A mass the size of a hen's egg developed at the site of the impulse, which was soft, and reducible, and external to the left labium majus, but not involving that part. At operation a suprapubic incision extending from the symphysis to the umbilicus was necessary on account of the extremely fat abdominal wall. Exposure of the pelvic organs was difficult, but was finally accomplished and revealed descent of the sigmoid loop through a triangular opening in the floor of the pelvis. This opening was bounded anteriorly by the posterior reflection of the broad ligament, mesially by the lower segment of the uterus

and the left uterosacral ligament, laterally and posteriorly by the rectum. The sigmoid being fixed at its point of continuation into the rectum, appeared to slide down along the posterior surface of the broad ligament and disappeared into the hernial opening, practically the entire loop being out of view. There were no surface adhesions and no evidences of constriction at any point. Gentle traction brought the sigmoid loop out of the sac. There was no process of the sac descending into the left labium as in the cases of "pudendal" hernia reviewed by Moscheowitz. However, the exit and course of the descent in this case was undoubtedly the same, the final destination being the subcutaneous tissue of the upper adductor region of the thigh rather than the labium. The protrusion undoubtedly occurred through the levator muscle and passed through the triangle bounded externally by the ischioavernosus, internally by the constrictor cunei and posteriorly by the transversus perinei, along the left lateral wall of the vagina, emerging in the thigh. The split in the levator was probably the result of the difficult twin labor mentioned in the history. No attempt was made to extirpate the sac. Its depth, the adipose status of the patient, her age precluded the prolongation of the anesthesia needlessly. Five or six mattress sutures of double Pagenstecher linen were placed across the long arm of the triangle thus closing it tightly and completely. A continuous suture was then whipped over the line of the mattress suture, taking another reef in the broad ligament. This last step caused a version of the uterus backward and to the left, superimposing the fundus over the site of the hernial opening. The sigmoid was anchored to the left psoas muscle at the brim of the pelvis and about two inches above that point, the idea being to prevent a descent to its habitual location in the vicinity of the hernial opening. The abdomen was closed in the usual way. The patient made an uneventful recovery and remained free from recurrence during the two years that she was under observation.

This case is published as one of pudendal hernia because I feel sure that its exit corresponds to the cases of pudendal hernia described by Cooper in his volume on *Hernia* published in 1807 and to the cases collected under the heading of pudendal hernia by Von Winekel in 1881, and reviewed by Moscheowitz in his paper referred to above, in which 11 authentic cases were listed. Moscheowitz doubts the occurrence of this type of hernia in the male and questions whether it is a fallacy to name this hernia for its destination (the vulva) rather than for its point of exit in the pelvic floor. The present case demonstrates this fallacy because the destination of the sac happened to be the adductor region of the thigh rather than the pudendum. Dr. J. A. Blake suggested the term "levator" hernia. However, I do not feel justified in making a new classification for a hernia the course and surgical anatomy of which was essentially the same as the cases described under the term "pudendal" hernia. According to Moscheowitz no case of "cure" of this type of hernia is recorded. This patient has been two years without recurrence during which period she has been performing all the heavy work of her household.

DISCUSSION

DR. WILLIAM P. HEALY.—The condition is so rare that few of us see a hernia at the vaginolabial base. Such a hernia may come out anteriorly or posteriorly appearing in the labial crease. When this occurs, the hernia is likely to be looked upon as a rectocele instead of a true vaginolabial hernia. One occasionally meets such a case in which a colporrhaphy and plastic operation is done, but not being a true rectocele the hernia is not reduced and goes through the culdesac of Douglas and out over the repaired pelvic floor. The best way to deal with these cases is to operate on them from the abdominal side. If possible reduce the sac. Having turned the sac inside out into the peritoneal cavity, excise it. You can then obliterate the hole and

reinforce the neck of the sac with such structures as are near by. There need be no fear of these hernias undergoing obstruction or strangulation for most of them have very free access into and out of the hernial canal.

DR. HAROLD BAILEY.—It is difficult to discuss pudendal hernia, there being only 12 cases reported during recent times. I think the point Dr. Grattan makes about the name is very important. If the cases of true pudendal hernia are those that rupture into the vaginolabial fold, it seems to me it would be well to differentiate between this type of hernia and one such as Dr. Grattan has described, which gradually comes down into the adductor region of the thigh.

DR. HERBERT C. CHASE reported a case of **Right Tubal Pregnancy of the Fourth Month with Rupture into the Cecum.**

This case is presented because of the clear sequence of events which lead to a fairly easy diagnosis and, because I believe the condition to be exceedingly rare, as I can find nowhere in the literature its exact duplicate. This patient, twenty-five years of age, began bleeding on May 4, after missing February, March, and April. The flow was scant and accompanied by no pain and no clots. On June 20 she began vomiting and experienced knife-like pains in the left lower quadrant of the abdomen. The pain continued until August 7, when on rising she felt a strong desire to evacuate the bowels. Several efforts were made with no result until midnight of the same day when she passed *per rectum* a large amount of dark clotted and bright red blood. During the following two days small dark clots and bright fluid were passed *per rectum*; then it ceased. From this time until her admission to the hospital on August 14 she had no pain but was very weak and much of the time did not know what was going on about her. When examined on August 14, she was pallid, thin, emaciated, her lips were colorless, pulse thready, heart sounds weak, with a soft systolic murmur at the apex. The abdomen was flat and soft, there being no rigidity or tenderness. A mass the size of a fist and easily palpable was felt in the right side of the pelvis. Vaginal examination showed no vaginal bleeding; the uterus was normal in size and position; the left adnexa were negative; the mass on the right side could be palpated. The patient was at once given an infusion of 500 c.c. of saline and brought by ambulance to the Woman's Hospital, arriving at 1 A. M. Here she was given a direct blood transfusion, following which the hemoglobin which had been 21 per cent rose to 35 per cent, and the red blood corpuscles from 1,344,000 to 1,816,000. She had lost no more blood and at 8:30 A. M. seemed better. The pulse, which on her arrival at the hospital was 144 had dropped to 130, and we decided to open the abdomen. A median, vertical, suprapubic incision was made. There was no bleeding or fecal contents, or any soiling of the peritoneal cavity when it was opened. The omentum and several loops of the intestines were adherent to the posterior surface of the right tubal mass. Two loops of small gut and the omentum separated easily. The cecum was adherent to the posterior surface of the ruptured ectopic and when it was separated a hole in the gut wall the size of a silver dollar was seen. The lumen of the gut was filled with a large round clot, the size of an English walnut, which filled the annular opening and was adherent to the posterior surface of the ectopic mass. When this clot was lifted, the fetus lay in the cecum. There was no other rupture and no blood in the culdesac or pelvis. The remainder of the large intestine from the cecum to the sigmoid was filled with blood clots. The rent in the cecum was repaired with a continuous suture of zero chromic catgut for the mucosa and a continuous (Lembert) suture of fine Pagenstecher thread for the serosa. The ectopic mass was then quickly removed after ligation of the blood vessels and a posterior vaginal drain of one inch iodoform gauze introduced through the vagina from above. During the operation

which required 40 minutes the patient was given 500 c.c. of glucose solution into the vein. She reacted well after the operation. On the fourth day postoperative she was given another direct transfusion, after which she gained rapidly and was out of bed on the fourteenth day, walked on the seventeenth day and went home on the twenty-first. On October 17, her blood pressure was 112, hemoglobin 58 per cent and her color and general condition improved so that she could do her own housework. The pelvic examination was negative.

The pathologic report was presented describing the specimen. Microscopically one section showed a blood clot and portion of the tubal wall considerably inflamed. The blood clot showed a delicate membrane, apparently amnion. Other sections showed abundant trophoblasts.

DR. HERMANN GRAD, of New York City, presented **An Analysis of Fifty Cases of Ectopic Gestation.** (For original article, see p. 360.)

DISCUSSION ON DR. CHASE'S CASE AND DR. GRAD'S PAPER

DR. FRANK R. OASTLER.—I have had the privilege of seeing 150 cases of ectopic, the last this afternoon. I have been interested in comparing the report which I published in 1917 in *Surgery, Gynecology and Obstetrics*, in which 109 cases were reported, which I had operated upon up to that time. Dr. Grad called attention to the fact that ectopic gestation is really a subacute disease. Out of the 109 cases which I reported only 15 cases were of the pyrotechnic or explosive variety. The disease is for the most part subacute and not acute. It must be differentiated from salpingitis. We were formerly taught that ectopic gestation was an acute condition and that we should expect to find the patient in a faint, collapsed and exsanguinated and with a thready pulse. It is the exception, not the rule, to find the patient presenting these symptoms. Another point upon which Dr. Grad's experience coincides with mine is that ectopic gestation occurs the same number of times on the right as on the left side. When one considers the etiology of ectopic gestation, a common cause is stated to be inflammatory disease. Inflammatory disease occurs oftener on the left side than on the right side. If it is true that ectopic gestation occurs equally as often on one side as on the other, inflammatory disease may be a cause of ectopic gestation but it cannot be the only cause.

Dr. Grad divides his cases into four groups, the mild, the severe, those with collapse and those with syncope. I have not been able to divide my cases so accurately, but divide them into two groups the fulminating and the subacute. If one makes such a fine distinction the patient may leave us while we are making the differentiation. Dividing ectopic gestations into two groups, the fulminating and the subacute make differentiation much simpler.

Dr. Grad attributes fatalities to hemorrhage. I think they may be attributed to shock as well as to hemorrhage and I would remove the blood clots in the abdominal cavity as thoroughly as possible because I believe they create a danger if left in the abdomen in that they make convalescence much harder and recovery much slower. I think that nearly all our fatal cases are due to both hemorrhage and shock, but there is one class of ectopic gestations that is nearly always fatal and that is the interstitial variety. When one meets with the fulminating cases that die before they reach the operating table, it will be found that they are nearly all of the interstitial variety.

Another question is the advisability of operating upon every case immediately. If one feels that he has made a diagnosis of ectopic pregnancy, he should at least open the culdesac and if there is blood in the culdesac the operation should be completed either above or below as the case may be.

As to the question of salt solution and gum glucose, I am not yet converted to the idea that salt solution is useless. Its action is not permanent and it may have to be repeated two or three times in order to sustain the patient. The injection of salt solution is a procedure of value for we must remember that we cannot always obtain blood for transfusion. Furthermore, a reaction may follow blood transfusion which may be sufficient to topple over a patient who is on the verge between life and death.

DR. LOUIS J. LADIN.—Dr. Grad's grouping is original and interesting, but I believe the only safe classification of tubal pregnancy is the division into two groups, —ruptured and unruptured. I cannot understand why a correct diagnosis was made only in twenty-five per cent of his series. This is certainly much too low. I desire to refer for a moment to a very valuable sign in the differential diagnosis of intra-uterine and extrauterine pregnancy. A positive sign of intrauterine pregnancy is the elastic area in the median line of the anterior wall of the uterus, to which I called attention in a paper read before this section in February, 1907. In uterine pregnancy the elastic area is always present, while on the other hand in extrauterine pregnancy the elastic area is absent. We have here a means of eliminating a most prolific source of error in the diagnosis of tubal pregnancy.

As regards treatment: After all that has been said and written on the subject, it is indeed surprising to find an advocate of delayed operation, especially in this city where transportation and access to a hospital can be obtained at a minimum loss of time.

My experience consists of a series of over three hundred operations for extrauterine pregnancy, a large number of them being of the tragic type where immediate operation was the invariable rule. No case was refused operation as long as there was a cardiac beat and in several cases I operated while the patient was unconscious and required no anesthesia. There were four deaths in this series due to complications and not to shock and hemorrhage.

In view of these experiences, I have no hesitancy in saying that if the fatal cases reported by Dr. Grad had been operated on immediately upon arrival at the hospital, and infused or transfused afterwards instead of being infused or transfused while delaying the operation, the result would have been different. I cannot emphasize the fact too strongly that shock, no matter how severe it may be, is no contraindication to immediate operation. Saline infusion should be employed either at the time, or after the abdomen is opened to check the bleeding. I have never had occasion to give a transfusion for hemorrhage from ruptured tubal pregnancy.

It is generally admitted now that patients die of hemorrhages due to ruptured tubal pregnancy, and I have seen one death caused by delayed operation. This patient collapsed in my office after examination, and instead of sending for an ambulance at once, I waited for an hour or so before doing so. I had the patient transferred to a hospital nearest to my office where she died on the operating table. This patient's life could have been saved if she had been transferred to the hospital when she collapsed in the office.

Subsequent to that experience I had four other patients collapse in my office with internal hemorrhage due to ruptured tubal pregnancy, and having learned my lesson, each one was transferred at once to a hospital for immediate operation, and they all recovered.

It is my practice to remove all the clots from the abdomen, and as much as possible of the fluid blood. Clots may become infected, give rise to intestinal adhesions and interfere with the smoothness of the convalescence. Shock and the rapidity of recovery after operation depended not so much upon the amount of blood lost as upon the time the hemorrhage was allowed to continue. The earlier the operation after rupture, the more rapid the recovery, regardless of the amount and severity of the

hemorrhage. The best and only rule to follow in these tragic cases is to place the patient on the table as quickly as possible and then do an infusion or a transfusion.

DR. BAILEY.—I hope the question as to the advisability of immediate operation, when the patient is in shock will be discussed. Under the conditions met in the war zone, as I understand, in the cases injured at the front it was found that the mortality was much lessened, if measures were instituted to combat shock before an operation was entered into.

DR. EDWARD WALLACE LEE.—I would like to speak first of Dr. Chase's case of ectopic gestation in connection with rupture into the intestine. Several years ago I was called to see a patient in a hospital on account of a fibroid tumor which was growing rapidly. One of the features of this case was that the woman was having bloody discharges from the bowels, and the peculiar feature was that the blood was generally in clots that looked like old clots. The patient was 45 years of age and the tumor was about the size of a six months' pregnancy. Vaginal examination showed fullness in the culdesac. A sound passed into the uterus showed the uterus of normal depth. I could not decide upon the diagnosis, but proceeded to open the abdomen. I found an immense organized clot of blood but no membranes. I broke it off piece by piece until I cleaned out the entire clot. A portion of this clot seemed to run into the intestinal canal. It had evidently ulcerated through into the bowel. Further proof of this seemed to be offered by the fact that when the large clot was cleaned away from the intestine the smell of gas from the bowels was very perceptible. I could not find the opening into the intestinal tract and I did not look long for it, but drained and packed the wound and sewed up the abdomen. A fecal fistula resulted which persisted for about six weeks and then closed. The patient's recovery was otherwise uncomplicated. That was evidently a tubal pregnancy which had ruptured into the intestinal tract.

DR. HIRAM N. VINEBERG.—I recall a case of ectopic with hemorrhage from the bowel. It occurred in a case in which the pregnancy had formed in the small stump of a tube, following a salpingectomy for a pyosalpinx some time before. The ovalur sac was enclosed in part by a portion of the sigmoid. At the operation I could not find any opening in the bowel. Evidently the villi had eroded the wall of the intestine sufficiently to produce bleeding, but not enough to cause a defect perceptible to the naked eye.

Regarding Dr. Grad's clinical classification of ectopic pregnancies, it may work satisfactorily for many cases, but a case with negligible intraperitoneal hemorrhage today may have a fresh effusion of blood into the peritoneal cavity during the night and tomorrow belong to one of the other groups.

It is sometimes difficult to differentiate between the syncope due to the shock, caused by the impact upon the peritoneum of a moderate amount of blood and that due to very copious effusion of blood such as occurs in the class of cases grouped by the reader of the paper as fatal, and designated by me as cataclysmic and by others as tragic, etc.

I have found the following a good working rule. In the moderate effusions an intravenous saline injection will bring about a prompt improvement which will be maintained; in the other group, there may be a slight improvement in the pulse at first but it soon disappears. The latter group (the cataclysmic) is exceedingly treacherous.

In one case in which I was curretting a woman in her home and was not provided with instruments for an extensive operation, I opened the abdomen with scissors, stopped the hemorrhage and the patient recovered. When patients are in a desperate condition, I would not transport them, but would operate at once even in bed. If

a person cut the femoral artery one would not think of giving him saline or gum acacia and glucose solution. If you are going to save your patient you cannot wait for transportation or blood transfusion.

I wish also to corroborate the statement of Dr. Oastler and Dr. Ladin in reference to salt solution; it has helped me out in these very desperate cases. When the bleeding has stopped salt solution is a great help. If possible blood clots should be removed; it is not a good thing to leave them.

DR. MEYER R. ROBINSON.—I wish to compliment Dr. Grad for his frankness in stating that in 25 per cent of his cases he failed to make a diagnosis. The experienced clinician will readily understand this apparently large percentage of mistaken diagnoses. While the acute, fulminant or tragic cases of ruptured tubal pregnancy present but slight diagnostic difficulties, the chronic case will frequently test the diagnostic acumen of the most astute gynecologist. I am sure that most of the diagnostic errors in Dr. Grad's series occurred in the latter group. Since the question of differential diagnosis was not taken up by the reader I shall refrain from discussing this phase of the problem, and shall limit my remarks to the question of when to operate and when not to operate in cases of ruptured tubal pregnancy.

At the Beth Israel Hospital where the number of ectopic gestations operated upon exceeds that of any other hospital in the city, we recognize only one contraindication to operative procedure in a case of ruptured tubal pregnancy, and that is, a dead patient. So long as the precordial heart sounds are audible, and respiration is still present, we operate, and not until sounder physiologic facts and better operative results are offered by those who wait for the symptoms of shock to subside before they resort to operative treatment, shall we deviate from our rule of immediate operation.

Why shall intraabdominal hemorrhage due to ruptured tubal pregnancy be treated differently from intraabdominal hemorrhage due to other pathologic causes? Does a surgeon hesitate to stop hemorrhage as soon as diagnosed, and why should the gynecologist?

If shock is the deterrent factor which stays the hand of some gynecologists from carrying out life saving operation, then why resort to other means first instead of at once removing the causes of shock, which in this instance are the hemorrhage and the peritoneal irritation by the foreign body, the free and the clotted blood.

As to time of transfusion, I also take a very decided exception to the views of the reader. No intravenous infusion, whether saline, glucose or bicarbonate solutions or whole blood should be given before the bleeding point is secured. Nature in her effort to save the bleeding patient from exsanguination, slows the heart action, diminishes the rate of the blood flow and with the fibrin ferment formed as soon as blood is spilled, produces clotting. The introduction of fluids into the veins stimulates the heart, increases the rapidity of the blood current, retards clotting, and thus thwarts Nature's effort to keep the bleeding point plugged. Intravenous infusion in these cases is life-giving and life-saving if done after the bleeding has been stopped.

DR. GRAD.—The case of Dr. Chase recalls to my mind a similar condition. The patient began to bleed from the rectum before there were any symptoms of ectopic gestation. The blood was sometimes dark, sometimes brighter. The ectopic had ruptured into the rectum. I found evidence of a large pelvic abscess. The culdesac was opened for drainage, and through the opening a small fetus was extruded.

DR. CHASE (in closing) said the point was brought out in the paper that the rupture was directly and primarily into the gut. There was no blood in the peritoneal cavity. Women were brought into the hospital where rupture had taken place into

the peritoneal cavity and was followed by sloughing of the membranes and infection which gave very definite symptoms, but here the entire tube became distended and ruptured into the intestine, so that every bit of blood was lost directly into the intestine and through the rectum.

DR. GRAD (in closing).—Just a few words in connection with Dr. Oastler's discussion as to the difference between collapse and syncope. This difference is not sharply drawn. When the patient presents the symptoms of collapse and the mind is clear, we call the condition collapse, but when there are waves of faintness during which the mind is not clear we call that condition syncope. In the latter I doubt whether we can save the patient whether we operate in the home or take the patient to the hospital. The question is can we do anything to save life? Can we put something into the circulation that will sustain the patient until we can get her to the hospital where we can get a donor and perform a transfusion and operate?

There is a difference between the shock of an ectopic pregnancy and that on the battlefield. In dealing with ectopic pregnancy one must treat the condition of collapse. These patients die while they are being transported to the hospital. If we can introduce the glucose and gum solution we may save some of these cases.

I made a different classification of ectopic pregnancies from that in general use because I felt that we have not dealt with them as efficiently as we should have done. The cases Dr. Ladin saved were cases with severe hemorrhage, and when severe hemorrhage occurs such cases should be operated upon, but the type of cases I am speaking of is that in which the patients are on the verge of death. Here the question is not to stop bleeding, for that has already stopped, but to bring the patient into a state in which she can be operated upon.

There has been some difference of opinion in regard to the removal of blood clots in the abdomen. I always remove as much of the blood as possible in an expeditious manner, but I feel that the blood clot will not do as much harm as prolonging the operation. It may cause a rise of temperature but it does not delay recovery.

DR. LEE.—Do you think that blood left in the abdominal cavity is of any benefit to the patient?

DR. GRAD.—The blood left in the abdominal cavity is absorbed too slowly to do any good, but I think we do more damage by keeping the abdomen open longer to clean out the blood clots than we do by leaving some in.

The question is, when called into consultation in these cases that are usually fatal and where we are practically helpless, what are we to do? Is there nothing to do but what we have been doing?

DR. HENRY DAWSON FURNESS described **A New Method of Vesical Anesthesia.**

Anesthesia for cystoscopic examinations and operative treatment of the bladder, aside from that obtained by general inhalation anesthesia or nerve blocking, as in sacral, epidural and spinal, has been most unsatisfactory. Local anesthesia obtained by the injection of drugs in solution is seldom sufficient for most of the conditions necessitating intravesical operations. Cocaine, the most efficacious of the anesthetic drugs, is unfortunately the most toxic. Some months ago Howard Lindeman read a paper on the treatment of trigonitis by the injection of the trigonum with a solution of urea and quinine hydrochloride, and exhibited a long needle that could be passed through a cystoscope to accomplish this purpose. In the discussion of Dr. Lindeman's paper I advocated the use of this instrument for the injection of anesthetic

solutions into the base of ulcers to be cauterized, and also into the pedicles of papillomata to be fulgurated. Later it occurred to me that in women the same result might be obtained by a more simple method, namely, infiltration of the vesicovaginal septum from the vaginal side. This method was, of course, applicable only to favorably situated lesions.

Almost any portion of the vesical wall can be infiltrated by one or both of these methods, although I would hesitate to infiltrate that portion of the bladder wall covered by peritoneum; yet in the absence of infection, even this portion might be safely and successfully anesthetized.

I have recently had opportunity to operate upon three patients under infiltration anesthesia. Two had papillomata of the region of the ureteral orifice, and one had an ulcer over the trigonum. The two papillomata cases were successfully fulgurated with very little discomfort after infiltrating the portion of the vesicovaginal septum that underlay the growth. In the ulcer case, cauterization with fused nitrate of silver was done almost painlessly. Previously I had cauterized the ulcer after having attempted to anesthetize the bladder by the instillation of 4 per cent eucaine solution, but the procedure caused a great amount of pain. In each of these cases a half per cent solution of novocaine with adrenalin was used, the amount varying from 5 to 10 c.c. It is essential to have a tightly fitting plunger to the syringe, as otherwise there will be a back leakage and failure to deposit the solution in the tissues. The syringe used by dentists for the infiltration of gums works admirably.

Thus far I have used this method in only the cases mentioned, but with each one the result was eminently satisfactory. I see no reason why the whole mass of the bladder, or any portion of it, cannot be anesthetized, and any operation that can be done under general anesthesia (where the element of relaxation is not essential) may be performed. In none of these cases was any untoward result noted.

DISCUSSION

DR. HOWARD E. LINDEMAN.—I have been much interested in what Dr. Furniss says, in that I think, that for the purpose he mentions, his method is much simpler than the one I have been using in the treatment of trigonitis. But my object is not to obtain anesthesia. In trigonitis the outstanding feature is the congestion, hypertrophy and hyperplasia of the subepithelial blood vessels, and I attempt to cause a destruction or at least a constriction and compression of these vessels. Knowing that quinine and urea solution when injected in the tissues for the production of local anesthesia causes a deposit of fibrin and a considerable induration at the point of injection, I decided to employ this in the treatment of trigonitis, avoiding necrosis. I have never made the injection from the vaginal side, but believe this could be done by having a cystoscope in the bladder at the same time to watch the point of the needle and control its location, and see that the point does not come through the mucous membrane, because one wishes to deposit the solution in the submucous tissues. It might be simpler to give the treatment in this way, because it is not an easy procedure through the cystoscope and takes considerable time; to cover an area the width of the trigone and for a distance of one-half inch from before backward takes one-half hour or more, but I believe it would be more difficult to localize the injection in the trigone unless a cystoscope were used coincidentally in the bladder to control the site of injection.

Department of Reviews and Abstracts

CONDUCTED BY HUGO EHRENFEST, M.D., ASSOCIATE EDITOR

Collective Review

The Views of Primitive Peoples Concerning Menstruation

(A Review of Literature)

BY JONATHAN WRIGHT, M.D., PLEASANTVILLE, N. Y.

AMONG all primitive nations, including the ancient Hebrews, we find an elaborate code of rules in regard to the conduct and treatment of women on arriving at the age of puberty, during pregnancy and the menstrual periods, and at childbirth. Among the Cherokees the presence of a woman under any of these conditions, or even the presence of any one who has come from a house where such a woman resides, is considered to neutralize all the effects of the doctor's treatment. For this reason all women, excepting those of the household, are excluded. A man is forbidden to enter, because he may have had intercourse with a tabooed woman, or may have come in contact with her in some other way; and children also are shut out, because they may have come from a cabin where dwells a woman subject to exclusion.

Among the Assiniboine, two taboos are still rigorously enforced. A menstruating woman must not step over any one's legs or body, and a certain medicine bundle must not be kept in the same lodge with her. If a woman menstruates, she immediately tells her husband, who then places the bundle outside his tent. If she is approaching a lodge and does not know whether a medicine bundle is kept inside, she pauses at the door to inform the inmates of her condition, so that the medicine can be removed. It is said that if the bundle were not taken out, a woman would continue to menstruate indefinitely.¹ In the social life of the Blackfoot Indians, "there is no special taboo upon a menstruating woman requiring her to live apart but she is not supposed to come near the sick. The belief is that in such a case something would strike the patient 'like a bullet and make him worse.' Further, at this time women are supposed to keep away from places where medicines are at work. These restrictions also apply to immediate associations with men and to women lax in virtue."² Among the Crow Indians the only regulation that seems to persist is that menstruating women must not come near medicine bundles. These must be removed from the lodge until she recovers. In former times the women were obliged to ride inferior horses when in this condition, and were not permitted to approach a wounded man or warriors setting out on a war party.³

Among the Thompson and the Ten'a⁴ Indians the only fresh meat she could eat was that of the female mountain-sheep. Among the Arapaho, "women do not spend several days in solitude during men-

stration as is the case among the Sioux, the Utes, and many other neighboring tribes. They sit quietly, keeping away from other people, especially from women and young men, but they eat with other people, and cook for them. They wrap their clothes tightly about the waist, they change their clothes every day, and wash themselves. There is no practice or ceremony connected with a girl's first menstruation. The menstruating woman is not allowed to enter the mesal tent, and if a man who has had intercourse with a menstruating woman takes part in this ceremony, he is found out by the smell. Sickly people and menstruating women are not allowed to enter a tent in which there is a sick person; the smell of the discharge would enter the body of the patient and make him worse. A woman just delivered also refrains from going into the tent of a sick person. Medicine-women after delivery go into the sweat-house, the steam-bath, to cleanse themselves."⁵

It is probable that some of the taboos imposed upon menstruating women or men who have had commerce with them have their origin in the odor, as for instance in hunting; not only by lustration, but, as Dr. Goddard has told me, by smoke of fragrant herbs such men must purify themselves before going on the hunt. This allows the conjecture that experience taught the hunter, skilled in getting to leeward of the game, that the scent puts them at disadvantage. It is only occasionally, however, that one gets a hint which suggests a rational explanation of a taboo of primitive man.

Speaking of the isolation of woman during menstruation, among the Indian tribes of the United States, Schoolcraft⁶ says: "The temporary abstraction of the female is always known to the lodge-circle. The lodge of separation is generally made of branches, rolls of bark, and light materials. In the summer, nothing further is demanded, and no fire is required. When the weather renders a fire desirable, a very small one is lighted from dry sticks. The amusement of the inmate, in the interval, is to prepare flags for mats, to pick up sticks for fire, or other light labors. The leading idea evinced by the custom is that of a deeply seated superstitious fear or dread of contact with any person within the camp. Everything which is touched by her hands during this period, is deemed ceremoniously unclean. She takes with her, in her seclusion, a spoon, a dish, and a small axe. If her step crosses the path of a hunter or warrior, it communicates a talismanic influence—the magical and medical charms of his pursuits are destroyed—the secret power of the Meda has been counteracted—in fine, his panoply of medaic and totemic influence is, for the time, paralyzed. The warrior's luck has been crossed for that day. Merely to touch a cup, with the marks of uncleanness, is equally malign. This superstition does not alone exert a malign influence, or spell on the human species, its ominous power, or charm, is equally effective on the animal creation, at least on those species which are known to depredate on their little fields and gardens. To cast a protective spell around these and secure the fields against vermin, insects, the sciurus and other species, as well as to protect the crops against blight, the mother of the family chooses a suitable hour at night, when the children are at rest and the sky is overcast, and having completely divested herself of her garments, trails her machecota behind her, and performs the circuit of the little field."

The information being copious from which to select, in regard to the North American Indians, though less so for other continents, nevertheless it is sufficiently recorded to demonstrate the prevalence of primitive thought on the subject in independent ethnic centers. Bosman⁷ said of Africa: "Menstruous women are here deemed so unclean that they are not permitted so much as to enter their husbands' houses, or to touch anything, either to dress the domestic diet or clean the house, or indeed on any other account; nor are they permitted so much as to look into, much less enter several houses, but, during this natural uncleanness, are obliged to reside in a separate house, though, as soon as that is over and they have washed themselves, they are restored to their former state." They disclaimed knowledge of any reason for the custom, but said it was traditional with them. Of Australia, Howitt⁸ says: "There is a regulation relating to camps in the Wakelbura tribe which forbids the women coming into the encampment by the same path as the men. Any violation of this rule would in a large camp be punished with death. The reason for this is the dread with which they regard the menstrual period of women. During such a time, a woman is kept entirely away from the camp, half a mile at least. A woman in such a condition has boughs of some tree of her totem tied round her loins, and is constantly watched and guarded, for it is thought that should any male be so unfortunate as to see a woman in such a condition, he would die. If such a woman were to let herself be seen by a man, she would probably be put to death. When the woman has recovered, she is painted red and white, her head covered with feathers, and returns to the camp." Lumholtz⁹ confirms this, saying: "As far as I know, the Australians everywhere regard their women as unclean in such circumstances. In some parts of the continent they are isolated in huts by themselves, and no one will touch a dish which they use; among other tribes a woman in this condition is not permitted to walk over the net which the men are making." As we shall see, these ideas to a considerable degree associated themselves somewhat with the idea of the process of parturition and the postpartum period,—in many tribes extended to the end of lactation which was itself much prolonged.*

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*To be continued.

Selected Abstracts

Indications and Prognosis of Abdominal Cesarean Section

Applegate: The Indications for Cesarean Section. American Journal of Obstetrics, 1919, lxxx, 167.

The author bases on a critical analysis of a series of 95 Cesarean sections the following deductions in regard to indications: A previous Cesarean is always an indication for Cesarean section in the event of subsequent pregnancies. Eclampsia in itself is not an indication. The operation becomes justifiable in the presence of complicating dystocic factors such as rigid and undilatable cervix and pelvic contraction, or a deformity, and when the traumatism and exhaustion of forcible delivery would be greater than the shock from an abdominal section. Placenta previa represents an indication only in complication with a dystocic factor, or in a case of placenta previa centralis when the child is viable. In regard to disproportion the author still adheres to the well-established rule that if there remains any doubt concerning the possibility of delivery through the natural route, the patient must be given the test of labor, but not to the point of exhaustion. In spite of all advance, abdominal Cesarean section still is a major operation attended by some danger.

Emerson: Cesarean Section. Boston Medical and Surgical Journal, 1920, clxxxii, 272.

In this article a critical summary is given of a series of 120 abdominal Cesarean sections. In the writer's opinion, this procedure to-day is one of the most finished operations. It is so simple, so rapidly performed that it is practically without danger in competent hands. Even in instances in which the mother's death is inevitable, the child often will be saved.

The author seems justified in this estimation of the dangers by a loss of only three mothers in this series. This fact also might explain that we find in these 120 Cesarean sections the following, not commonly accepted, indications for Cesarean sections: albuminuria in 6 cases; breech presentation in 4; double vagina in 2; epilepsy in 1; occipito-posterior rotation in 2; suspension of fetus in utero by cord in 1; transverse presentation in 2; uterine inertia in 9 cases.

The writer advocates Cesarean section even for minor degrees of pelvic contraction. In cases of placenta previa all other methods should be discarded. Whenever placenta previa is diagnosed, Cesarean section should be the only method considered. Other cases, best treated by means of abdominal hysterotomy, are those in which there is inertia or atony, and malpositions of the fetus.

Schumann: Cesarean Section. Its Indications and Limitations in the Obstetrics of To-day. American Journal of Obstetrics, 1919, lxxix, 371.

The indications for the employment of this very radical method of terminating labor have become so broad and in certain hands are so loosely applied, that a careful critic of the indications and limitations of the procedure would seem to be in order.

The classical indication for the operation at term, for dystocia due to pelvic deformity, still holds good practically without modification, except that it now includes cases which formerly would have been delivered by high forceps.

The second common reason for the performance of Cesarean section is the development of a malposition. In the absence of pelvic anomalies in most cases of this sort version is the most advantageous method of delivery.

Abdominal delivery is almost invariably called for by uterine or vaginal neoplasms causing a dystocia. A difficult forceps might prove successful, but will increase the danger of necrosis and will leave the great probability of an abdominal operation in the future for the extirpation of the growth. In every case of this sort the obstetrician, before resorting to Cesarean, must be convinced that the tumor is a source of true obstruction. The mere presence of a uterine or ovarian new-growth does not constitute an indication.

Rigidity or true stenosis of the cervix rarely necessitates abdominal delivery.

Central placenta previa is an indication of the very first importance, and, from the standpoint of the mother, even more important than the indication for Cesarean in pathologic labor. If, however, labor is established, the cervix soft and dilatable, and the patient a multipara, even in this form of placenta previa either version or the use of the bag offer the most advantageous solution of the problem.

The ideal treatment of eclampsia demands rapid and general elimination of toxins together with an immediate delivery which causes the least possible traumatism to the patient. Plain indications for Cesarean then are presented in the presence of a toxemia not appreciably improved by vigorous eliminative treatment continued for a reasonable time (six to eight hours), the absence of active labor, the presence of a rigid, undilated cervix, usually noted in primiparæ. Thus eclampsia constitutes a most important but strictly limited field for Cesarean section.

Such systemic diseases as pulmonary tuberculosis, endocarditis, etc., may rarely call for a section in the interest of the mother.

The foregoing statements relate entirely to abdominal hysterotomy deliberately selected as the most efficacious plan of terminating labor in the interest of both mother and child.

In other instances the performance of a section even under adverse conditions may become mandatory. In a case of premature detachment of the placenta the operation is done in the interest of the mother. In complete uterine rupture the laparotomy is required both for control of the hemorrhage, and for the removal of the fetus which usually has escaped into the abdominal cavity. In such occurrences no limitations or contraindications can be considered.

Of all classes of cases coming to the obstetrician for Cesarean section, the largest is the group, in which labor has proceeded far without recognition of the existing disproportion between pelvis and head, or in which a pathologic presentation had not been corrected early in labor when this would have been possible. Most of these patients have been repeatedly examined, possibly have been subjected to unsuccessful attempts of forcible delivery, are exhausted and probably infected. In many of these cases some variety of Cesarean section is followed by hysterectomy. In the determination of the proper treatment of each

individual case of this group the right of the unborn child, when still living, must be duly considered, but it must not be forgotten that the potential succeeding children also have certain rights. In the decision of such a puzzling problem there must be considered in order: the rights of the child about to be born, those of the parents (not the mother alone), and also the rights of the state with respect to the number and condition of children born to its citizens.

In the case of the dead fetus no indication for any form of abdominal delivery exists.

In general it might be said, that there are too many uteri sacrificed upon mere suspicion of infection. The teaching in this respect has been ultraconservative.

Essen-Moeller: Results and Indications of Abdominal Cesarean Section. Archives mensuelles d'obstétrique et de gynécologie, 1919, viii, 221.

The writer presents a summary of 106 abdominal Cesarean sections performed in the University Hospital of Lund. In the overwhelming majority of cases (74) the operation was necessitated by a disproportion between pelvis and head. In this group only one mother, already infected, died. Of the 10 eclampsia patients 3 died after abdominal section. This forces him to the conclusion that in this class of cases the vaginal Cesarean section is preferable, if not contraindicated by anticipated difficulties. Abdominal Cesarean was performed for placenta previa on 7 patients. The operation, in the writer's belief, should be limited to not infected patients with severe hemorrhage if the cervix is not sufficiently dilated for a version. Of the total series in 8 cases a radical operation of the Porro type was made for existing or only suspected infection. These 8 patients recovered.

Loenne: Indication and Prognosis of Cesarean Section. Zentralblatt für Gynäkologie, 1919, xliii, 501.

Loenne analyzes in this paper a continuous series of 100 Cesarean sections. The indication for this operation was narrow pelvis in 93 cases; eclampsia in 1; rectal carcinoma in 1; abnormal head presentations in 3 cases. Many of the patients had been frequently examined, also by midwives, before admission to the hospital, and 13 of them showed an elevation of temperature before operation. The classical operation (with transverse fundus incision) was performed 48 times, the extraperitoneal section 27 times, the cervical transperitoneal modification 25 times. Only one patient died after operation, however, as the result of a cardiac insufficiency and nephritis. The patient was afebrile, and a classical section had been done. For the infected cases the transperitoneal method proves the most advantageous. The writer emphasizes the relative frequency of wound infection after the extraperitoneal operation.

Weymeersch: Conservative Cesarean Section after the Rupture of the Membranes. Revue française de gynécologie et d'obstétrique, 1920, xv, 97.

The idea, first promulgated by Schauta and now rather generally accepted, that the classic operation must be limited to the surely aseptic cases with an intact ovum, in the author's opinion, does not need

be rigidly enforced. Zarate attempted to protect the peritoneal cavity and the external surface of the uterus from contamination, by surrounding carefully the uterus with sterile gauze compresses and making the incision through this covering. He also placed a Mickulicz drain into the lower wound angle for protection. Weymeersch applied this technic in five cases, omitting the drain. All patients recovered. In his opinion the rupture of the membranes in itself should not be considered a contraindication against the conservative classical method to which he gives preference over the extraperitoneal and transperitoneal modifications.

Lecocq: Abdominal Hysterectomy of the Unopened Full Term Uterus.

Annales de gynécologie et d'obstétrique, 1919, lxxii, 541.

This entirely original method of removing the uterus still containing the live fetus was first suggested and executed by Reymond. A detailed record is given of five operations performed in this manner. All five children were saved. One mother died of general peritonitis. In this case the already present severe infection formed the indication for this particular operation. In general this operation should be performed whenever a hysterectomy or a Porro operation seems indicated. A contamination of the abdominal cavity with the escaping amniotic fluid thus is excluded. The uterus, quickly removed, is taken to another room, opened by an assistant and the child extracted. The essential point in the successful performance of this operation lies in the limitation of the time between the last ligation and the opening of the uterus. It varied in these five cases between 27 and 30 seconds. The placenta apparently contains enough oxygen to prevent asphyxiation.

Bar: The High Cesarean Section. *Archives mensuelles d'obstétrique et de gynécologie*, 1919, viii, 49.

In this group of 275 operations performed by him, only 12 times he operated after labor was well under way. The ideal conditions for abdominal Cesarean are represented in the woman just starting in labor with membranes intact. It has become his routine to make the incision high on the anterior uterine wall, running it up to the fundus. He tries to delay the rupture of the membranes as long as possible by cutting first a small button hole, through which he pushes a finger, loosening widely the membranes. Then the incision is extended. Of the last 97 sections in every instance the well mother left the hospital nursing her child. But figures taken from various sources still reveal a maternal mortality of from 2 to 12 per cent.

DeLee: Newer Methods of Cesarean Section. *Journal of American Medical Association*, 1919, lxxiii, 91.

The choice between extraperitoneal and transperitoneal methods is still undecided, but the majority of operators seem to prefer the latter. In the presence of insuperable mechanical disproportion, that is, of the absolute indication for Cesarean section, therapeutic abortion today is absolutely contraindicated. At full term four courses are available to select from: the classic Cesarean, the Porro modification, the transperitoneal cervical section, and the extraperitoneal operation. In clean and suspected cases DeLee recommends the transperitoneal cervical

section, and in frankly infected cases either the extraperitoneal section or Porro. Only if Cesarean section is done for placenta previa he prefers the old classical operation. In abruptio placenta the transperitoneal is the method of choice, unless great speed is required to save the child.

Beck: Observations on a Series of Cesarean Sections. American Journal of Obstetrics, 1919, lxxix, 197.

The writer presents a detailed report of 37 personal cases and a statistical study of morbidity of 107 consecutive sections performed within the last six years in the Long Island College Hospital. He concludes the paper with the description of a new method which represents a modification of the Kroenig procedure. In this latter operation better peritoneal protection is obtained by utilizing the bladder reflection to cover the incision in the lower uterine segment. He was induced to develop this modification by the observation of a slough of the apex of the bladder flap which led to the partial uncovering of the uterine wound, and finally to the death of the patient. The new modification attempts to relieve the tension on this upper end of the bladder flap. After the bladder and its peritoneum have been stripped off from the anterior uterine surface, as in an abdominal hysterectomy, also the peritoneum on the upper side of the transverse incision is carefully freed from its attachment to the uterus, the two denuded peritoneal flaps are retracted, up and down, exposing enough of the uterine wall to permit an ample incision. After removal of fetus and placenta, and closure of the uterine incision in two layers, the upper peritoneal flap is brought down over the superior portion of the closed incision, and anchored with a few interrupted catgut sutures, avoiding the uterine suture line in the middle. The bladder reflection now is carried about 1 cm. above the site of the original transverse incision, thus lapping the peritoneal flaps and thoroughly sealing the uterine wound.

There was a gross mortality of 3.8 per cent in the entire series of 105 consecutive cases. The mortality in 19 cases previously handled on the outside was 16 per cent. The mortality of 86 cases handled entirely within the hospital was slightly over 1 per cent. The morbidity varied between from 13 to 70 per cent according to the absence or presence of the conditions which govern morbidity.

Scheyer: Extraperitoneal Cesarean Section in the Breslau Gynecologic Clinic. Zentralblatt für Gynäkologie, 1920, xlv, 1032.

The old classical operation is only performed if complicating conditions demand this type of hysterotomy. The extraperitoneal modification was the operation of choice in 49 of the 57 cases considered in this inaugural dissertation. The routine adoption of this operation seems desirable because the possibility of existing infection in the individual case can hardly be excluded. The operation is safe. In the 3 patients, who died, the operation itself was not responsible for the unfortunate outcome. The fetal mortality was 7.5 per cent. Interesting in the casuistic of morbidity are 6 cases (2.2 per cent) of bladder injuries, and one case of ureterovaginal fistula. Out of 8 cases, in which the Cesarean was performed for the second time, 7 showed the old scar unimpaired by the new pregnancy.

Gall: Pubiotomy or Transperitoneal Cesarean Section. *Monatsschrift für Geburtshilfe und Gynaekologie*, 1919, xlix, 438.

From his personal experience and a careful study of the literature the writer concludes that the transperitoneal Cesarean section as a whole offers so many advantages over pubiotomy and symphysiotomy that it must be given preference.

Rivière et Lacouture: A Primary Abdominal Pregnancy after Cesarean Section. *Revue française de gynécologie et d'obstétrique*, 1920, xv, 43.

About one year after an abdominal Cesarean section a peritoneal crisis manifested itself after a period of amenorrhea lasting a little more than five months. On opening the abdomen a macerated five months fetus was found, lying in the peritoneal cavity, the placenta being attached in right iliac fossa. The placenta could be ablated without difficulty and without causing a severe hemorrhage. The uterus then was removed. The right tube was found closed, the left greatly altered. The writers express it as their belief that this is an instance of primary abdominal pregnancy.

It seems noteworthy that in the scar of the old Cesarean incision the muscular edges were seen widely separated, the mucosa alone apparently having united.

Markoe: Cesarean Section Following a Previous Extraperitoneal Cesarean Section. *New York Medical Journal*, 1919, cix, 1022.

Markoe during an abdominal Cesarean section had an opportunity to inspect the effects of an extraperitoneal Cesarean made 15 months ago. At that time the patient was suffering from a mixed infection of colon bacilli and nonhemolytic streptococci. Carrel treatment instituted immediately after the operation sterilized the infected tissues around the bladder and lower uterine segment so effectively that no more bacteria were to be found on the twelfth day, allowing the wound to close rapidly. At the time of the subsequent Cesarean operation no adhesions could be discovered in the bladder region or in the broad ligaments.

Williams: Delivery by the Natural Passages Following Cesarean Section. *American Journal of Obstetrics*, 1919, lxxx, 435.

Since 1916 much information of the healing of Cesarean scars has been obtained. J. Whitridge Williams studied 10 uteri containing scars from previous Cesarean operations. In 8 of these it was difficult to distinguish the scar by the naked eye, and histologic examination showed complete regeneration of the muscle fibers with no fibrous tissue scar. In another specimen there was marked thinness of the scar, but it consisted only of regenerated muscle fibers. In the tenth case the scar was imperfect and rupture had occurred. Spalding studied histologically 4 Cesarean scars and found all thinned, and more or less defective. He believes that a sac of the membranes enters the depression in a thinned scar, and then acts very much like the bag of waters in dilating the cervix. Eventually a uterine rupture is caused. Losee examined 20 Cesarean scars. He also observed that in a perfectly healed scar the muscle is perfectly regenerated and no fibrous tissue is found. When infection occurs, however, union takes place by the formation of fibrous tissue and without regeneration of the muscle.

Mason reported 19 previously unrecorded cases of vaginal delivery following abdominal sections. None of these scars ruptured. On the other hand it must be admitted that many reports of ruptured Cesarean scars have appeared in literature. Findley collected and tabulated 63 such cases up to 1916, and since that time many additional observations have been recorded.

Adding a few more cases of normal vaginal delivery subsequent to a Cesarean to two cases described in detail in a previous paper, Williams reiterates his opinion that the mere presence of a scar in the uterus is not sufficient reason for a repeated Cesarean. If the scar has healed without sepsis, the patient may be delivered later by normal labor in safety. Such patients should, however, be managed in a well equipped hospital where in case of necessity an abdominal section can be performed without delay. Great care must be taken in proper approximation during the closure of the uterine wound to obtain a scar equal in strength to any part of the uterine wall.

Nacke: Spontaneous Rupture of Uterus at the Moment of Opening the Abdomen for Cesarean Section. *Zentralblatt für Gynäkologie*, 1919, xliii, 334.

The title states the author's unusual experience. Remarkable is the fact that Nacke had the rare opportunity of observing this same phenomenon in two patients. In both instances the laparotomy was performed for a second Cesarean. In both the rupture occurred in the old scar at the moment when the uterus was delivered through the abdominal incision. In his belief, the attachment of the placenta at the site of the scar caused its weakening. The rupture occurred when the protecting counterpressure of the abdominal wall against the weakened area was removed by lifting the uterus through the abdominal opening.

Seitz: Removal of Exostosis of Symphysis during Cesarean Section. *Monatsschrift für Geburtshülfe und Gynaekologie*, 1919, 1, 15.

Seitz performed this operation in two patients. In the first case two Cesareans had been made previously. During the third section he removed a high spur from the posterior surface of the symphysis and succeeded, as ascertained by direct measuring, in lengthening the true conjugate from 8 to 9½ cm. An examination made 3 months later proved that the obtained increase of 1½ cm. had remained unchanged.

In the second case he found and chiseled away a broad ridge, thus enlarging the true conjugate by 1 cm. Exostoses of this sort can often be palpated, especially in rachitic patients. Their removal during a Cesarean section is easily accomplished and apparently results in a permanent enlargement of the true conjugate. There are as yet no records available of labors subsequent to this operation.

Linzenmeier: Cesarean Section on the Dying or Dead Patient. *Medizinische Klinik*, 1920, xvi, 439.

The writer pleads in favor of the Cesarean attempt on the dying patient. In his personal experience with 4 sections after death he obtained 3 living children. The difficulties in the private house are undoubtedly considerably greater than in hospital practice to obtain permission of the family for the performance of this operation, however,

it seems inexcusable to wait for sentimental reasons until the patient is dead, if an operation performed a little earlier actually affords a chance to save the life of the fetus.

Slemons and Johnson: Cesarean Section under Procain Anesthesia.
Journal of American Medical Association, 1920, lxxiv, 882.

Toward the successful treatment of pregnant women suffering from decompensated cardiac lesion, especially with renal complications, nothing proves more helpful than a satisfactory local anesthesia, permitting a safe and speedy evacuation of the uterus. Procain meets this requirement. In general the writers agree with Webster's great satisfaction with procain. However, they find that a weaker solution (1:400) with the addition of three drops of epinephrin to each ounce of the solution, proves equally as effective. The delivery of the uterus through the abdominal incision, which Trout (*Surgery, Gynecology and Obstetrics*, 1918, xxvii, 95) describes as the crucial step in a Cesarean under local anesthesia, is rarely advisable even under general anesthesia. If this procedure is omitted under local anesthesia, the incision can be made shorter, and the patient is spared at two points: when the uterus is delivered, and when the fetus is extracted. Thus extraction and all manipulation on the lower uterine segment is avoided, which also Webster found to be a painful maneuver. Essential for the successful performance of a Cesarean under local anesthesia are two facts, namely, preliminary administration of morphine and a cooperative attitude on the part of the patient.

Irving: Cesarean Section under Local Anesthesia Combined with Morphine-Scopolamine Narcosis. Boston Medical and Surgical Journal, 1920, clxxxii, 578.

The special indications for this anesthesia in cases of abdominal Cesarean section are such grave complications of labor as cardiac disease, diabetes, nephritis, cardiorenal disease, pulmonary tuberculosis, and bronchial asthma. The essential features for success are: sufficient time both for general medication and local anesthetic to take effect, and the studious avoidance of all rough manipulation. The author gives no preliminary cathartic, only a low enema the morning of the operation. The ears of the patient are plugged with cotton. While still in bed she is given 1/6 gr. of morphine with 1/200 of scopolamine subcutaneously. The morphine is not repeated. The same dose of scopolamine is repeated every 40 minutes until the patient is quiet and dozing. This result, as a rule, is obtained with three doses. Then her eyes are covered and she is quietly transferred to the operating room. The operation is not begun before she is asleep. Just before the operation is started another 1/200 of scopolamine is injected. Infiltration in usual manner is made with a one per cent solution of novocaine or procaine.

The writer considers in detail the special indications for dealing with cardiac cases.